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# **AMIGA**

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**29/3-1.1 A2091 MEMORY AUTO-CONFIGURATION LIMITATIONS.**

THE A2091 HARD DISK CONTROLLER INCLUDES SOCKETS FOR THE INSTALLATION OF DRAM CHIPS FOR MEMORY EXPANSION. JUMPERS ARE PRESENT ON THE BOARD, AND ARE DESCRIBED IN THE USERS MANUAL WHICH SUPPORT THE PRESENCE OF NONE, 512K, 1M, 2MB OF MEMORY, HOWEVER ONLY THE NONE AND THE 2M-BYTE SETTINGS WORK CORRECTLY IN ALL SYSTEM CONFIGURATIONS.

IF EITHER THE 512K OR 1M SETTING IS USED THE BOARD MAY NOT FUNCTION CORRECTLY, DEPENDING ON WHETHER OTHER BOARDS CONTAINING MEMORY ARE PRESENT AND ARE IN SLOTS THAT ARE CONFIGURED BY THE SYSTEM BEFORE THE SLOT CONTAINING THE A2091. WHEN THIS SITUATION OCCURS THE WRONG "BANK" OF CHIPS ON THE A2091 IS SELECTED AND THE SYSTEM WILL NOT BOOT.

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**29/3-1.1 A2091 MEMORY AUTO-CONFIGURATION LIMITATIONS. (CONT)**

IN MOST CASES THE INITIAL INSTALLATION OF THE A2091 WILL NOT CAUSE ANY IMMEDIATE PROBLEM, BUT CONCERN EXISTS THAT WHEN THE CUSTOMER ADDS ADDITIONAL BOARDS TO THE SYSTEM, THE CONFIGURATION WILL CHANGE AND THE A2091 BOARD WILL NO LONGER WORK. OBVIOUSLY, THIS WOULD LEAD TO SOME CONFUSION ABOUT WHICH BOARD IS ACTUALLY CAUSING PROBLEMS.

WE STRONGLY RECOMMEND USING ONLY THE NONE AND 2M-BYTE SETTINGS, HOWEVER IF THE SMALLER SETTINGS ARE REQUIRED THEN THE BEST OPTION IS TO PUT THE A2091 BOARD IN THE "FIRST" SLOT. IN ALL US PRODUCTION (REV4 AND REV6) MOTHERBOARDS, THIS IS THE SLOT NEAREST THE POWER SUPPLY (NOT INCLUDING THE CO-PROCESSOR SLOT). ON OLDER MOTHER BOARD REVISIONS, IT IS THE SLOT FARthest AWAY FROM THE POWER SUPPLY.

[REPEAT OF 27/3-8.1 & 28/3-5.1]

**29/3-2.1 A2091 IC MEMORY 262,144 ADDRESS X 4 BIT DRAMS.**

COMMODORE PARTS DEPARTMENT DOES NOT SUPPLY DRAM IC'S FOR MEMORY UPGRADES. THE FOLLOWING VENDORS (VENDOR PART NUMBER INCLUDED) HAVE BEEN QUALIFIED FOR USE IN THE A2091. THESE ARE "DIP" TYPE IC'S.

NEC	UPD424256C-10
TOSHIBA	TC514256P-10
MATSUSHITA	MN414256-10
TEXAS INSTR.	TMC44C2256-10N

PLEASE NOTE: USER MANUALS RECOMMEND CUSTOMERS TAKE THEIR UNITS TO AN AUTHORIZED SERVICE CENTER TO HAVE MEMORY UPGRADES DONE.

IMPROPER INSTALLATION WILL VOID CREDIT ISSUED FOR A RETURNED REPAIRABLE UNIT.

[REPEAT OF 28/3-7.1]

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**Trainig Request Form**

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## **Service Training**

**Please complete one per attendee. Return completed form 30-60 days prior to requested date.**

1. Requested Course \_\_\_\_\_

2. Requested Date \_\_\_\_\_ Alternate Date \_\_\_\_\_

3. Technician \_\_\_\_\_

Company Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone \_\_\_\_\_ Service Account Number \_\_\_\_\_

4. Briefly describe the skill level of attending technician.

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Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

**Please return completed form to:**

**Commodore Business Machines**

**1200 Wilson Drive**

**West Chester, PA 19380**

**Attn: John DiMeo**

CBM Use Only--Do not write in this space

CBM Approval: \_\_\_\_\_ Date: \_\_\_\_\_

Signature (attending technician): \_\_\_\_\_ Date: \_\_\_\_\_

Signature (service trainer): \_\_\_\_\_ Date: \_\_\_\_\_

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**30/3-1.1 A2091 Memory auto-configuration limitations.**

The A2091 hard disk controller includes sockets for the installation of DRAM chips for memory expansion. Jumpers are present on the board, and are described in the users manual which support the presence of none, 512K, 1M, 2M-Byte of memory, however only the none and the 2M-Byte settings work correctly in all system configurations.

If either the 512K or 1M setting is used the board may not function correctly, depending on whether other boards containing memory are present and are in slots that are configured by the system before the slot containing the A2091. When this situation occurs the wrong "bank" of chips on the A2091 is selected and the system will not boot.

In most cases the initial installation of the A2091 will not cause any immediate problem, but concern exists that when the customer adds additional boards to the system, the configuration will change and the A2091 board will no longer work. Obviously, this would lead to some confusion about which board is actually causing problems.

We strongly recommend using only the none and 2M-byte settings, however if the smaller settings are required then the best option is to put the A2091 board in the "first" slot. In all US production (rev4 and rev6) motherboards, this is the slot nearest the power supply(not including the co-processor slot). On older motherboard revisions, it is the slot farthest away from the power supply.

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**30/3-2.1 A2286 Problem with setup menu.**

Problem description:

Occasionally, the setup menu will not accept keyboard input. When this occurs, keyboard input to the Amiga side is also "garbled". In this case, the Amiga and PC sides are confused about the state of the "Ctrl" and "Alt" keys. Two (2) work arounds have been identified:

1. Hitting the "Ctrl" and "Alt" keys one (1) time each clears up the problem. If done in PC window, both PC and Amiga sides are fixed. If done on the Amiga side, only keystrokes on the Amiga side return to normal.
2. Reboot the PC via "Ctrl+Alt+Del" and both PC and Amiga keyboard activity returns to normal.

**30/3-3.1 A2300 Genlock fix to work with A3000.**

This fix is to create the correct clock frequency of 28.375156MHZ needed. The fix must be done for the NTSC and PAL versions of the A2300 Genlock.

1. For NTSC A2300 Genlock (PN# 312803-01), A 0.1uf axial capacitor must be connected from pin 6 of IC6, (signal N\_VSYNC), to ground.
2. For pal A2300 Genlock (PN# 312803-02), the above modification is also required in addition to the inclusion of a jumper wire shorting pin 13 of IC4 to pin 2 of IC1.

**30/3-3.2 Correction of, A2300 Genlock fix to work with A3000.**

In Techtopics issue 29/3-9.1 and 30/3-3.1, make the following correction:

In item #2 of the original Techtopic, the sentence "wire shorting pin 13 of IC4 to pin 2 of IC1" is incorrect. it should read, "wire shorting pin 13 of IC4 to pin 11 of IC1". The rest of the fix is correct.

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**30/3-4.1 Rodime 40MB Hard Drive sub to Quantum 40MB Hard Drive kit.**

Rodime 40MB Hard Drive CBM PN# 311833-01 is being subed to Quantum Prodrive 40S Hard Drive kit, CBM PN# 314687-01. This kit contains:

Part Number	Description
313440-01	40MB Quantum drive assy.
313439-01	Cable, long SCSI
312748-01	Insulator vibration
905970-04	Nut keps #6-32

To use this drive with the 2090/2090A controller, remove jumpers A1 and A2 on the Quantum drive before installing it. To install or prep the drive, use the install program found on the 2090/2090A hard disk software. During installation, make sure to make selections for a SCSI type drive and then select five (5), Quantum Prodrive 40S.

**30/3-5.1 A3000 Second drive configuration.**

When adding a second 3 1/2" floppy drive to an A3000, the first floppy (df0:) must be moved to the open slot to the right. The second floppy (df1:) must be put where df0: was originally.

Note: Make sure that the drive select on the second drive (df1:) is configured to D1, also jumper 351 must be moved to pins 1 and 2 to enable the drive.

If you need further information, please contact the 800 Technical Support line.

**30/3-6.1 A2300 Demo disk replacement.**

The Genlock demo disk supplied with your A2300 has been revised. Certain items mentioned in chapter two of the manual have been removed to provide the space required for this improvement. These include the Animations demo drawer and the Notepad tool.

The new disk (part number 317718-02) fixes some incompatibilities with software 2.0.

To get your replacement disk, send your old disk (part number 317718-01) to the service department, attention Tony Greco. Please be sure to include your return address. As soon as the old disk is received, the new disk will be sent out.

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**30/3-7.1 Genlock problem with A2000.**

We have received reports that some A2000's may have been shipped with the Tick signal (J300), jumpered incorrectly. This may cause major problems with third party Genlocks. If problems arise during genlock installation, please verify that pins 1 and 2 of J300 are jumpered.

**30/3-8.1 One Megabyte Agnus use in Commodore A500 Computers.**

Commodore Business Machines does not support the One Megabyte addressing feature of the Fat Agnus 8372 IC in A500 Computers.

Regardless of the version of Fat Agnus, all A500's have been factory jumper set to be functionally identical.

8370 Fat Agnus chips are used on rev 5 boards with 256K x 1 DRAMS. 8372 Fat Agnus chips are used on rev 6a boards with 256K x 4 DRAMS. The boards are functionally interchangeable. Each will support 512K of chip RAM and 512K of expansion RAM with an A501 installed.

Enabling the One Megabyte feature, at the customers' request, will void the warranty. Instructions detailing implementation of the One Megabyte addressing have been circulated without Official Approval and Commodore does not assume any liability for damages resulting from this mode of operation in the A500.

**30/3-9.1 A2060/A2065/A2232 System Schematics, CBM PN# 314042-01 Release.**

Mailed with Techtopics issue 30, for Amiga authorized service centers only, are the A2060/A2065/A2232 System Schematics.

**30/3-9.2 Enclosure: A2060/A2065/A2232 System Schematics.**

Enclosed in Techtopics issue 30, CBM PN# 314042-01, A2060/A2065/A2232 System Schematics.

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<b>30/5-2.1</b>	<b>PC60-III Techtips.</b>
<b>30/5-3.1</b>	<b>1930 VGA Color Monitor System Schematics, CBM PN# 314255-01.</b>
<b>30/5-3.2</b>	<b>Enclosure: 1930 VGA Color Monitor System Schematics.</b>

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**30/5-1.1      PC40-III PCB Revision 8.x - DMA channel 7 acknowledge signal.**

Expansion hardware which utilizes DMA channel 7 (DRQ7, NDACK7' on PC40) require a modification to the PC40-III revision 8.x PCB.

Connect jumper, on trace side of PCB, from U803 pin #7 (74f138, see page 5-26, PC40-III Service manual) to CN502 pin #32 (expansion bus, see page 5-22, PC40-III Service manual). This modification, with all previous modifications, makes the PCB revision 8.2c.

This is considered part of third party expansion card installation and is not covered under warranty.

**30/5-2.1      PC60-III Techtips.**

- 1) When disabling the on board Hard Drive on the PC60-III, place a jumper from pin 1 to pin 2 of J42. (located above J41, Hard Drive connector. On schematics, Located off pin 15 of U85). See page 29 (Sheet16 of 20) PC60-III System Schematics.
- 2) When installing a second Hard Drive to the PC60-III, set the jumpers on the Hard Drive as follows:

Jumper DS	Position SS	Meaning
1	0	Single drive configuration
1	1	Master - in dual drive setup
0	0	Slave - in dual drive setup
0	1	Test selection (self-seek) DO NOT USE!

1 = Jumper installed      0 = No jumper installed

Note: This is for Quantum Prodrive series Hard Drives only!

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**30/5-2.1      3) PC60-III Techtips.**

**(Cont.)**

Jumper J33 and J34 indicate if a 387 coprocessor is installed. (See page 15 in PC60-III System Schematics)

When installing an 387, move jumpers from 1-2 to 2-3 positions on both J33 and J34.

Pin 1 is indicated by the cut edge on the white silk screen outline of the socket. Note that outer-edge pin holes in socket are not used with INTEL 80387. They are used with WYTEK 3167.

**30/5-3.1      1930 VGA Color Monitor System Schematics, CBM PN# 314255-01 Release.**

Mailed with Techtopics issue 30, for Amiga authorized service centers only, are the 1950 VGA Color Monitor System Schematics.

**30/5-3.2      Enclosure: 1930 VGA Color Monitor System Schematics.**

Enclosed in Techtopics issue 30, CBM PN# 314255-01, 1930 VGA Color Monitor System Schematics.

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**End 30/5**

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- 28/3-13.1 A2091 SYSTEM SCHEMATICS, CBM PN# 314674-01 RELEASE.**
- 28/3-13.2 ENCLOSURE: A2091 SYSTEM SCHEMATICS.**

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**28/3-1.1 A2620/A2630 COPROCESSOR NEW ROM UPGRADE.**

A NEW SET OF ROMS FOR BOTH THE A2620 AND A2630 HAVE BEEN RELEASED AND WILL BE AVAILABLE THROUGH THE PARTS DEPARTMENT SOON. THE NEW PART NUMBERS ARE 390282-04 AND 390283-04.

THE NEW ROMS CORRECT AUTOCONFIG AND OUT OF MEMORY ERRORS.

[REPEAT OF 27/3-4.1]

**28/3-2.1 A590 FAST FILE SYSTEM UPDATE.**

THE A590 HARD DRIVE COMES WITH FACTORY INSTALLED SOFTWARE. ON SOME UNITS THE FAST FILE SYSTEM WHICH WAS INSTALLED NEEDS TO BE UPDATED FOR CERTAIN THIRD PARTY SOFTWARE TO OPERATE CORRECTLY.

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**28/3-2.1 A590 FAST FILE SYSTEM UPDATE. (CONT)**

TO UPDATE THE A590 WITH THE NEW VERSION OF FAST FILE SYSTEM USE THE INSTALL DISK, WHICH IS INCLUDED WITH THE A590, RUN "HD TOOL BOX" BY CLICKING TWICE ON ICON, CLICK BOX MARKED "PARTITION DRIVE", THEN CLICK BOX MARKED "ADVANCED OPTIONS", THEN CLICK ICON MARKED "ADD/UPDATE FILESYSTEM".

THE NEW VERSION OF FAST FILE WILL AUTOMATICALLY BE INSTALLED BY THIS OPERATION.

[REPEAT OF 27/3-5.1] [REVISED AS OF 1-3-90]

**28/3-3.1 A2286 UPGRADE ROMS V3.6 AND PAL CHIPS**

THE FOLLOWING IC'S ARE AVAILABLE FOR UPGRADING THE A2286.

ROM - U57 - PART NUMBER 380682-03

ROM - U56 - PART NUMBER 380683-03

PAL I - U33 - PART NUMBER 380686-05

PAL III - U55 - PART NUMBER 380684-02

THESE ROMS FIX THE AUTO-CONFIGURATION ERRORS (LIBRARY NOT FOUND AND AMOUSE SETUP FAILURE) AND PROTECTION MODE SOFTWARE CRASHES (WITH CERTAIN THIRD PARTY PROGRAMS THAT LOCK UP).

THE ROM UPGRADE IS COVERED UNDER WARRANTY AND A STANDARD CARD REPLACEMENT RATE OF \$25.00 WILL BE CREDITED TO YOUR ACCOUNT.

ALL FOUR CHIPS MUST BE REPLACED. IN ORDER FOR CREDIT TO BE ISSUED, THE OLD IC'S MUST BE RETURNED TO THE PARTS DEPARTMENT.

THE WARRANTY POLICY NUMBER FOR THIS FIX IS - W2286-1289.

[REPEAT OF 27/3-6.1]

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**28/3-4.1 A2088 UPGRADE ROM.**

A NEW ROM REVISION HAS BEEN ISSUED TO UPGRADE THE A2088.

ROM - U28 - PART NUMBER - 380788-06

THIS ROM FIXES AUTO-CONFIGURATION ERRORS CAUSED BY SOME THIRD PARTY SOFTWARE AND HARDWARE.

THIS IS AN IN-LINE CHANGE AND IS NOT COVERED UNDER STANDARD WARRANTY. DEALER BILLING IS \$7.70.

[REPEAT OF 27/3-7.1]

**28/3-5.1 A2091 MEMORY AUTO-CONFIGURATION LIMITATIONS.**

THE A2091 HARD DISK CONTROLLER INCLUDES SOCKETS FOR THE INSTALLATION OF DRAM CHIPS FOR MEMORY EXPANSION. JUMPERS ARE PRESENT ON THE BOARD, AND ARE DESCRIBED IN THE USERS MANUAL WHICH SUPPORT THE PRESENCE OF NONE, 512K, 1M, 2MB OF MEMORY, HOWEVER ONLY THE NONE AND THE 2M-BYTE SETTINGS WORK CORRECTLY IN ALL SYSTEM CONFIGURATIONS.

IF EITHER THE 512K OR 1M SETTING IS USED THE BOARD MAY NOT FUNCTION CORRECTLY, DEPENDING ON WHETHER OTHER BOARDS CONTAINING MEMORY ARE PRESENT AND ARE IN SLOTS THAT ARE CONFIGURED BY THE SYSTEM BEFORE THE SLOT CONTAINING THE A2091. WHEN THIS SITUATION OCCURS THE WRONG "BANK" OF CHIPS ON THE A2091 IS SELECTED AND THE SYSTEM WILL NOT BOOT.

IN MOST CASES THE INITIAL INSTALLATION OF THE A2091 WILL NOT CAUSE ANY IMMEDIATE PROBLEM, BUT CONCERN EXISTS THAT WHEN THE CUSTOMER ADDS ADDITIONAL BOARDS TO THE SYSTEM, THE CONFIGURATION WILL CHANGE AND THE A2091 BOARD WILL NO LONGER WORK. OBVIOUSLY, THIS WOULD LEAD TO SOME CONFUSION ABOUT WHICH BOARD IS ACTUALLY CAUSING PROBLEMS.

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**28/3-5.1 A2091 MEMORY AUTO-CONFIGURATION LIMITATIONS. (CONT)**

WE STRONGLY RECOMMEND USING ONLY THE NONE AND 2M-BYTE SETTINGS, HOWEVER IF THE SMALLER SETTINGS ARE REQUIRED THEN THE BEST OPTION IS TO PUT THE A2091 BOARD IN THE "FIRST" SLOT. IN ALL US PRODUCTION (REV4 AND REV6) MOTHERBOARDS, THIS IS THE SLOT NEAREST THE POWER SUPPLY (NOT INCLUDING THE CO-PROCESSOR SLOT). ON OLDER MOTHER BOARD REVISIONS, IT IS THE SLOT FARthest AWAY FROM THE POWER SUPPLY.

[REPEAT OF 27/3-8.1]

**28/3-6.1 A2620/A2630 IC MEMORY 262,144 ADDRESS X 4 BIT DRAMS.**

COMMODORE PARTS DEPARTMENT DOES NOT SUPPLY DRAM IC'S FOR MEMORY UPGRADES. THE FOLLOWING VENDORS (VENDOR PART NUMBER INCLUDED) HAVE BEEN QUALIFIED FOR USE IN THE A2620 OR A2630. THESE ARE "ZIP" TYPE IC'S.

NEC	D424256V-10
TOSHIBA	TC51425AZ-10
MATSUSHITA	MN414256L-10
FUJITSU	MB81C4256-10

**PLEASE NOTE:** USER MANUALS RECOMMEND CUSTOMERS TAKE THEIR UNITS TO AN AUTHORIZED SERVICE CENTER TO HAVE MEMORY UPGRADES DONE.

IMPROPER INSTALLATION WILL VOID CREDIT ISSUED FOR A RETURNED REPAIRABLE UNIT.

[REPEAT OF 27/3-10.1]

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**28/3-7.1 A2091 IC MEMORY 262,144 ADDRESS X 4 BIT DRAMS.**

COMMODORE PARTS DEPARTMENT DOES NOT SUPPLY DRAM IC'S FOR MEMORY UPGRADES. THE FOLLOWING VENDORS (VENDOR PART NUMBER INCLUDED) HAVE BEEN QUALIFIED FOR USE IN THE A2091. THESE ARE "DIP" TYPE IC'S.

NEC	D424256C-10
TOSHIBA	TC514256P-10
MATSUSHITA	MN414256L-10
TEXAS INSTR.	TMC44C2256-10N

**PLEASE NOTE:** USER MANUALS RECOMMEND CUSTOMERS TAKE THEIR UNITS TO AN AUTHORIZED SERVICE CENTER TO HAVE MEMORY UPGRADES DONE.

IMPROPER INSTALLATION WILL VOID CREDIT ISSUED FOR A RETURNED REPAIRABLE UNIT.

**28/3-8.1 A2091 HDC - POWER CABLE AND DATA CABLE AVAILABILITY.**

THE A2091 HARD DISK CONTROLLER, PACKAGED WITHOUT A HARD DRIVE (THE A2091-40, CONTAINS A 40MB HARD DRIVE), SHOULD CONTAIN A POWER CABLE (CBM# 312646-01) AND A DATA CABLE (CBM# 312573-01) TO CONNECT TO THE DRIVE, AS INDICATED ON PAGE 3 OF THE USER MANUAL.

SEVERAL UNITS HAVE BEEN SHIPPED WITHOUT THESE ITEMS. ANY DEALER/SERVICER WHO HAS RECEIVED A2091'S WITHOUT CABLES SHOULD CALL THE 800 TECH HOT LINE AND REQUEST THE CABLES BE SENT OUT (THERE IS NO CHARGE). PLEASE HAVE THE COMMODORE INVOICE NUMBER TO GIVE TO THE TECHNICIAN WHEN YOU CALL.

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**28/3-9.1     IMPORTANT NOTICE - AMIGA 1000 KEYBOARDS.**

AMIGA 1000 KEYBOARDS PART NUMBER - 327063-01.

EFFECTIVE IMMEDIATELY, A1000 KEYBOARDS WILL NOT BE SHIPPED UNTIL A DEFECTIVE KEYBOARD IS RETURNED TO COMMODORE ATTN: SERVICE DEPARTMENT (DO NOT SEND TO PARTS DEPOT).

ALL CURRENT ORDERS HAVE BEEN CANCELED. NEW ORDERS MUST BE RE-ENTERED. NO ORDER WILL BE HONORED WITHOUT A DEFECTIVE A1000 KEYBOARD HAVING BEEN RETURNED.

**28/3-10.1    A2091 ROM UPGRADE TO REVISION 6.1.**

NEW ROMS ARE AVAILABLE FOR THE A2091 FROM THE PARTS DEPARTMENT. THESE NEW ROMS ARE USED IN BOTH THE A2091 AND THE A590.

PART NUMBERS:     390722-01 IC ROM ODD REV 6.1  
                     390721-01 IC ROM EVEN REV 6.1

THIS PREVENTS ILLEGAL READS AND WRITES TO LOCATION ZERO OF AMIGA WORKING STORAGE WHICH SOME THIRD PARTY APPLICATION SOFTWARE ATTEMPTS.

THIS IS CONSIDERED AN IN-LINE CHANGE, AND IS NOT COVERED UNDER WARRANTY. DEALER COST FOR THE NEW ROMS IS \$33.00 EACH.

**28/3-11.1    A590 ROM UPGRADE TO REVISION 6.1.**

NEW ROMS ARE AVAILABLE FOR THE A590 FROM THE PARTS DEPARTMENT. THESE NEW ROMS ARE USED IN BOTH THE A2091 AND THE A590.

PART NUMBERS:     390722-01 IC ROM ODD REV 6.1  
                     390721-01 IC ROM EVEN REV 6.1

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**28/3-11.1 A590 ROM UPGRADE TO REVISION 6.1. (CONT)**

THIS PREVENTS ILLEGAL READS AND WRITES TO LOCATION ZERO OF AMIGA WORKING STORAGE WHICH SOME THIRD PARTY APPLICATION SOFTWARE ATTEMPTS.

THIS IS CONSIDERED AN IN-LINE CHANGE, AND IS NOT COVERED UNDER WARRANTY. DEALER COST FOR THE NEW ROMS IS \$33.00 EACH.

**28/3-12.1 KIT A590 HDD EXCHANGE (EPSON HM755 TO WD93028-X-A)**

WHEN REPLACING AN EPSON HM755 HARD DRIVE FROM AN A590, YOU MUST ORDER KIT NUMBER 314678-01. THE HARD DRIVE COMES IN THE KIT. THE KIT CONTAINS:

314679-01 CABLE ASSY 34P DATA W/BEND  
314681-01 CABLE ASSY 4P POWER  
312711-03 DRIVE ASSY HDD 20MB WD93028-X-A

THIS IS NECESSARY BECAUSE PCB ASSEMBLY 312615-01, (WHICH IS USED WITH AN EPSON DRIVE), HAS THE CABLE CONNECTOR ON THE LEFT, AND PCB ASSEMBLY 312615-02, (WHICH IS USED WITH WD DRIVE), HAS THE CABLE CONNECTOR ON THE RIGHT. THE KIT ALLOWS YOU TO REPLACE THE EPSON DRIVE WITH THE WD DRIVE WITHOUT REPLACING THE PCB.

**28/3-13.1 A2091 SYSTEM SCHEMATICS, CBM PN# 314674-01 RELEASE.**

MAILED WITH TECHTOPICS ISSUE 28, FOR AMIGA AUTHORIZED SERVICE CENTERS ONLY, ARE THE A2091 SYSTEM SCHEMATICS.

**28/3-13.2 ENCLOSURE: A2091 SYSTEM SCHEMATICS.**

ENCLOSED IN TECHTOPICS ISSUE 28, CBM PN# 314674-01, A2091 SYSTEM SCHEMATICS.

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**END 28/3.**

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<b>28/5-0.0</b>	<b>INDEX - PC SECTION TECHTOPICS ISSUE 28.</b>
<b>28/5-1.1</b>	<b>915 3.5" FLOPPY DISK DRIVE CONFIGUATION.</b>
<b>28/5-2.1</b>	<b>BIOS ROM REV 4.38 UPGRADE - PC10-III, PC20-III, COLT.</b>
<b>28/5-3.1</b>	<b>COPROCESSOR CIRCUIT MODIFICATION - PC30-III/COLT286.</b>
	<b>WARRANTY POLICY NUMBER - WPC30-0590.</b>
<b>28/5-4.1</b>	<b>PC40-III PCB REVISION 8.X - DMA CHANNEL 7 ACKNOWLEDGE SIGNAL.</b>

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**28/5-1.1    915 3.5" FLOPPY DISK DRIVE CONFIGUATION.**

THE 915 3.5" FLOPPY DISK DRIVE FOR THE PC'S ARE SHIPPED CONFIGURED FOR USE AS A 1.44 MB DRIVE, USED ON OUR PC40-III AND COLT 286. THIS DRIVE CAN ALSO BE USED AS A 720K DRIVE ON XT (PC10-III & PC20-III).

TO DO SO YOU MUST SOLDER A JUMPER AT J4, ON THE INTERFACE PCB, WHICH WILL ACTIVATE "MOTOR ON" WITH THE "DRIVE SELECT" SIGNAL. ALL OTHER INSTALLATION PROCEDURES REMAIN THE SAME. TO USE THE DRIVE AS A 720K DEVICE, YOU MUST ALSO ADD THE DRIVEPARM COMMAND TO YOUR CONFIG.SYS FILE, FOUND IN YOUR MSDOS USERS GUIDE.

**28/5-2.1    BIOS ROM REV 4.38 UPGRADE - PC10-III, PC20-III, COLT.**

A NEW BIOS ROM, REVISION 4.38, CBM PART NUMBER - 318085-05, HAS BEEN RELEASED FOR THE PC10-III, PC20-III, COLT, AND THE SELECT EDITION.

THIS IS CONSIDERED A RUNNING CHANGE, AND IS NOT COVERED BY WARRANTY. CUSTOMERS MUST PAY FOR THIS UPGRADE. DEALER BILLING IS \$33.00.

THE NEW ROM REV 4.38, ADDS A NEW SETUP FEATURE WHICH EMULATES THE "AT" SETUP UTILITY. TO RUN THE "AT" SETUP UTILITY, PRESS <CNTRL-ALT-ESC>. THE SCREEN RESEMBLES THE PC40-III SETUP.

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**28/5-2.1 BIOS ROM REV 4.38 UPGRADE - PC10-III, PC20-III, COLT. (CONT)**

DEFAULT CONFIGURATION IS:

ON BOARD LPT AT 3BC H  
ON BOARD COM AT 3F8 H  
ON BOARD MOUSE ENABLE, USING IRQ2  
4.77 SYSTEM SPEED

BIOS REVISION 4.38 SUPPORTS THE 5720 IO/MOUSE CONTROLLER, AND REAL TIME CLOCK ACCESS - LIKE "AT" SYSTEMS, CLOCK IS SET DURING SETUP, THE SETCLOCK UTILITY DOES NOT NEED TO BE RUN.

**28/5-3.1 COPROCESSOR CIRCUIT MODIFICATION - PC30-III/COLT286.**

WARRANTY POLICY NUMBER - WPC30-0590.

INSTALLING A MATH COPROCESSOR (80287) IN THE PC30-III, OR COLT286, REVISION 1.4 (PCB ASSY# 313236-02) PCB WILL REQUIRE THE FOLLOWING MODIFICATIONS. NO REVISION IS NECESSARY WITH REVISION 8.1 (PCB ASSY# 313235-01).

- 1) SOLDER A #28 AWG WIRE FROM PIN 34 OF U302 (80287) TO PIN 49 OF U801 (FE3000).
- 2) ON SCHEMATIC #313236 REV 1.4, (PAGE 5-23 IN COLT286, OR PC30-III SERVICE MANUAL) INDICATE AN ACTIVE LOW ON SIGNAL NNPCS' (80287 - CHIP SELECT).
- 3) PC30-III, COLT286, PCB ASSEMBLY #313235-01, REVISION 1.4 BECOMES REVISION 1.5 WITH THIS MODIFICATION.

A NEW WARRANTY POLICY NUMBER - WPC30-0590, HAS BEEN ASSIGNED TO THIS FIELD FIX. THIS NUMBER MUST APPEAR IN THE "PART NUMBER" FIELD OF THE NARDA FORM. PROOF OF PURCHASE OF A 80287 MATH COPROCESSOR MUST BE SUBMITTED WITH THE NARDA FORM TO VALIDATE THE WARRANTY. A WARRANTY LABOR RATE OF \$30.00 WILL BE ISSUED FOR THIS FIX.

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**28/5-4.1    PC40-III PCB REVISION 8.X - DMA CHANNEL 7 ACKNOWLEDGE SIGNAL.**

EXPANSION HARDWARE WHICH UTILIZES DMA CHANNEL 7 (DRQ7, NDACK7' ON PC40) REQUIRE A MODIFICATION TO THE PC40-III REVISION 8.X PCB.

CONNECT JUMPER, ON TRACE SIDE OF PCB, FROM U803 PIN #7 (74F138, SEE PAGE 5-26, PC40-III SERVICE MANUAL) TO CN502 PIN #32 (EXPANSION BUS, SEE PAGE 5-22, PC40-III SERVICE MANUAL). THIS MODIFICATION MAKES THE PCB REVISION 8.2C.

THIS IS CONSIDERED PART OF THIRD PARTY EXPANSION CARD INSTALLATION AND IS NOT COVERED UNDER WARRANTY.

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**END 28/5.**

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**29/3-3.1 A2091 HDC - POWER CABLE AND DATA CABLE AVAILABILITY.**

THE A2091 HARD DISK CONTROLLER, PACKAGED WITHOUT A HARD DRIVE (THE A2091-40, CONTAINS A 40MB HARD DRIVE), SHOULD CONTAIN A POWER CABLE (CBM# 312646-01) AND A DATA CABLE (CBM# 312573-01) TO CONNECT TO THE DRIVE, AS INDICATED ON PAGE 3 OF THE USER MANUAL.

SEVERAL UNITS HAVE BEEN SHIPPED WITHOUT THESE ITEMS. ANY DEALER/SERVICER WHO HAS RECEIVED A2091'S WITHOUT CABLES SHOULD CALL THE 800 TECH HOT LINE AND REQUEST THE CABLES BE SENT OUT (THERE IS NO CHARGE). PLEASE HAVE THE COMMODORE INVOICE NUMBER TO GIVE TO THE TECHNICIAN WHEN YOU CALL.

[REPEAT OF 28/3-8.1]

**29/3-4.1 A2091 ROM UPGRADE TO REVISION 6.1.**

NEW ROMS ARE AVAILABLE FOR THE A2091 FROM THE PARTS DEPARTMENT. THESE NEW ROMS ARE USED IN BOTH THE A2091 AND THE A590.

PART NUMBERS:      390722-01 IC ROM ODD REV 6.1  
                      390721-01 IC ROM EVEN REV 6.1

THIS PREVENTS ILLEGAL READS AND WRITES TO LOCATION ZERO OF AMIGA WORKING STORAGE WHICH SOME THIRD PARTY APPLICATION SOFTWARE ATTEMPTS.

THIS IS CONSIDERED AN IN-LINE CHANGE, AND IS NOT COVERED UNDER WARRANTY. DEALER COST FOR THE NEW ROMS IS \$33.00 EACH.

[REPEAT OF 28/3-10.1]

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**29/3-5.1 A590 ROM UPGRADE TO REVISION 6.1.**

NEW ROMS ARE AVAILABLE FOR THE A2091 FROM THE PARTS DEPARTMENT. THESE NEW ROMS ARE USED IN BOTH THE A2091 AND THE A590.

PART NUMBERS:     390722-01 IC ROM ODD REV 6.1  
                     390721-01 IC ROM EVEN REV 6.1

THIS PREVENTS ILLEGAL READS AND WRITES TO LOCATION ZERO OF AMIGA WORKING STORAGE WHICH SOME THIRD PARTY APPLICATION SOFTWARE ATTEMPTS.

THIS IS CONSIDERED AN IN-LINE CHANGE, AND IS NOT COVERED UNDER WARRANTY. DEALER COST FOR THE NEW ROMS IS \$33.00 EACH.

[REPEAT OF 28/3-11.1]

**29/3-6.1 A590 HDD EXCHANGE KIT (EPSON HM755 TO WD93028-X-A).**

WHEN REPLACING AN EPSON HM755 HARD DRIVE FROM AN A590, YOU MUST ORDER KIT NUMBER 314678-01. THE HARD DRIVE COMES IN THE KIT. THE KIT CONTAINS:

314679-01 CABLE ASSY 34P DATA W/BEND  
314681-01 CABLE ASSY 4P POWER  
312711-03 DRIVE ASSY HDD 20MB WD93028-X-A

THIS IS NECESSARY BECAUSE PCB ASSEMBLY 312615-01, (WHICH IS USED WITH AN EPSON DRIVE), HAS THE CABLE CONNECTOR ON THE LEFT, AND PCB ASSEMBLY 312615-02, (WHICH IS USED WITH WD DRIVE), HAS THE CABLE CONNECTOR ON THE RIGHT. THE KIT ALLOWS YOU TO REPLACE THE EPSON DRIVE WITH THE WD DRIVE WITHOUT REPLACING THE PCB.

[REPEAT OF 28/3-12.1]

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**29/3-7.1 A2286 PROBLEM WITH SETUP MENU**

**PROBLEM DESCRIPTION:**

OCCASIONALLY, THE SETUP MENU WILL NOT ACCEPT KEYBOARD INPUT. WHEN THIS OCCURS, KEYBOARD INPUT TO THE AMIGA SIDE IS ALSO "GARBLED". IN THIS CASE, THE AMIGA AND PC SIDES ARE CONFUSED ABOUT THE STATE OF THE "CTRL" AND "ALT" KEYS. TWO (2) WORKAROUNDS HAVE BEEN IDENTIFIED:

1. HITTING THE "CTRL" AND "ALT" KEYS ONE (1) TIME EACH CLEARS UP THE PROBLEM. IF DONE IN PC WINDOW, BOTH PC AND AMIGA SIDES ARE FIXED. IF DONE ON THE AMIGA SIDE, ONLY KEYSTROKES ON THE AMIGA SIDE RETURN TO NORMAL.
2. REBOOT THE PC VIA "CTRL+ALT+DEL" AND BOTH PC AND AMIGA KEYBOARD ACTIVITY RETURNS TO NORMAL.

**29/3-8.1 A3000 SYSTEM SCHEMATICS, CBM PN# 314677-02.**

A SPECIAL MAILING IS BEING DONE FOR ALL AMIGA AUTHORIZED SERVICE CENTERS. ENCLOSED IS THE A3000 SYSTEM SCHEMATICS. PCB REVISION OF THIS MANUAL IS, REV 7.0.

**29/3-8.2 ENCLOSURE: A3000 SYSTEM SCHEMATICS.**

MAILED ON APRIL 24, 1990 WAS, CBM PN# 314677-02, A3000 SYSTEM SCHEMATICS.

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**29/3-9.1 A2300 GENLOCK FIX TO WORK WITH A3000.**

THIS FIX IS TO CREATE THE CORRECT CLOCK FREQUENCY OF 28.375156MHZ NEEDED. THE FIX MUST BE DONE FOR THE NTSC AND PAL VERSIONS OF THE A2300 GENLOCK.

1. FOR NTSC A2300 GENLOCK (PN# 312803-01), A 0.1uf AXIAL CAPACITOR MUST BE CONNECTED FROM PIN 6 OF IC6, (SIGNAL N\_VSYNC), TO GROUND.
2. FOR PAL A2300 GENLOCK (PN# 312803-02), THE ABOVE MODIFICATION IS ALSO REQUIRED IN ADDITION TO THE INCLUSION OF A JUMPER WIRE SHORTING PIN 13 OF IC4 TO PIN 2 OF IC1.

**29/3-10.1 A2300 USE WITH A1950 MONITOR.**

WHEN USING A 23 PIN ADAPTOR WITH THE A1950 TO A2300 GENLOCK, A JUMPER MUST BE CONNECTED TO PIN 23 OF THE 23 PIN VIDEO CONNECTOR (CN1), TO PIN 6 (+5V), OF THE EDGE CARD CONNECTOR ON THE A2300 GENLOCK. THIS ADDS +5VDC SUPPLY TO THE 23 PIN VIDEO PORT FOR USE WITH THE A1950 MONITOR.

THIS IS NOT COVERED UNDER WARRANTY.

**29/3-11.1 A2091 HARD DRIVE CONTROLLER - PROBLEM WITH TWO DEVICES.**

REPORTED PROBLEMS WITH THE A2091 HARD DRIVE CONTROLLER, WHICH CAUSE THE SYSTEM TO LOCK UP WHEN ACCESSING TWO OR MORE SCSI DEVICES AT THE SAME TIME, HAVE BEEN TRACED TO THE WESTERN DIGITAL SCSI CONTROLLER IC, WD33C93.

NEW ROMS, WHICH ARE CURRENTLY BEING TESTED, WILL BE AVAILABLE EARLY NEXT MONTH AND WILL CORRECT THIS PROBLEM WITHOUT HAVING TO REPLACE THE SCSI CONTROLLER.

YOU WILL BE NOTIFIED WHEN THESE NEW ROMS ARE AVAILABLE. THIS WILL BE TREATED AS AN IN-WARRANTY REPAIR.

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**29/3-12.1 RODIME 40MB HARD DRIVE SUB TO QUANTUM 40MB HARD DRIVE KIT.**

RODIME 40MB HARD DRIVE CBM PN# 311833-01 IS BEING SUBED TO QUANTUM PRODRIVE 40S HARD DRIVE KIT, CBM PN# 314687-01. THIS KIT CONTAINS:

<u>PART NUMBER</u>	<u>DESCRIPTION</u>
313440-01	40MB QUANTUM DRIVE ASSY.
313439-01	CABLE, LONG SCSI
312748-01	INSOLATOR VIBRATION
905970-04	NUT KEPS #6-32

TO USE THIS DRIVE WITH THE 2090/2090A CONTROLLER, REMOVE JUMPERS A1 AND A2 ON THE QUANTUM DRIVE BEFORE INSTALLING IT. TO INSTALL OR PREP THE DRIVE, USE THE INSTALL PROGRAM FOUND ON THE 2090/2090A HARD DISK SOFTWARE. DURING INSTALLATION, MAKE SURE TO MAKE SELECTIONS FOR A SCSI TYPE DRIVE AND THEN SELECT FIVE (5), QUANTUM PRODRIVE 40S.

**29/3-13.1 A3000 WARRANTY LABOR RATES - JUNE 1990.**

FOLLOWING IS A LIST OF THE WARRANTY LABOR RATES AS OF JUNE, 1990:

<u>DESCRIPTION</u>	<u>WARRANTY RATE</u>
A3000 PCB REPLACEMENT	\$45.00
A3000 KEYBOARD EXCHANGE	7.00
A3000 POWER SUPPLY EXCHANGE	27.00
NO DEFECT FOUND/MINOR REPAIR	15.00
A3000 FLOPPY DISK DRIVE REPLACEMENT	25.00
A3000 FLOPPY DISK DRIVE ALIGNMENT	35.00
A3000 HARD DISK DRIVE REPLACEMENT	40.00
1950 MONITOR - COMPONENT REPAIR	35.00
1950 MONITOR - NO DEFECT/MINOR REPAIR	12.00

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**29/3-14.1 A3000 SECOND DRIVE CONFIGUATION.**

WHEN ADDING A SECOND 3 1/2" FLOPPY DRIVE TO AN A3000, THE FIRST FLOPPY (DF0:) MUST BE MOVED TO THE OPEN SLOT TO THE RIGHT. THE SECOND FLOPPY (DF1:) MUST BE PUT WHERE DF0: WAS ORIGANALLY.

NOTE: MAKE SURE THAT THE DRIVE SELECT ON THE SECOND DRIVE (DF1:) IS CONFIGURED TO D1, ALSO JUMPER 351 MUST BE MOVED TO PINS 1 AND 2 TO ENABLE THE DRIVE.

IF YOU NEED FURTHER INFORMATION, PLEASE CONTACT THE 800 TECHNICAL SUPPORT LINE.

**29/3-15.1 1950 SYSTEM SCHEMATICS, CBM PN# 314036-01 RELEASE.**

MAILED WITH TECHTOPICS ISSUE 29, FOR AMIGA AUTHORIZED SERVICE CENTERS ONLY, ARE THE 1950 SYSTEM SCHEMATICS.

**29/3-15.2 ENCLOSURE: 1950 SYSTEM SCHEMATICS.**

ENCLOSED IN TECHTOPICS ISSUE 29, CBM PN# 314036-01, 1950 SYSTEM SCHEMATICS.

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**END 29/3**

# **5**

# **PC**

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**29/5-1.1 COPROCESSOR CIRCUIT MODIFICATION - PC30-III/COLT286.**  
WARRANTY POLICY NUMBER - WPC30-0590.  
**29/5-2.1 PC40-III PCB REVISION 8.X - DMA CHANNEL 7 ACKNOWLEDGE SIGNAL.**

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**29/5-1.1 COPROCESSOR CIRCUIT MODIFICATION - PC30-III/COLT286.**

WARRANTY POLICY NUMBER - WPC30-0590.

INSTALLING A MATH COPROCESSOR (80287) IN THE PC30-III, OR COLT286, REVISION 1.4 (PCB ASSY# 313236-02) PCB WILL REQUIRE THE FOLLOWING MODIFICATIONS. NO REVISION IS NECESSARY WITH REVISION 8.1 (PCB ASSY# 313235-01).

- 1) SOLDER A #28 AWG WIRE FROM PIN 34 OF U302 (80287) TO PIN 49 OF U801 (FE3000).
- 2) ON SCHEMATIC #313236 REV 1.4, (PAGE 5-23 IN COLT286, OR PC30-III SERVICE MANUAL) INDICATE AN ACTIVE LOW ON SIGNAL NNPCS' (80287 - CHIP SELECT).
- 3) PC30-III, COLT286, PCB ASSEMBLY #313235-01, REVISION 1.4 BECOMES REVISION 1.5 WITH THIS MODIFICATION.

A NEW WARRANTY POLICY NUMBER - WPC30-0590, HAS BEEN ASSIGNED TO THIS FIELD FIX. THIS NUMBER MUST APPEAR IN THE "PART NUMBER" FIELD OF THE NARDA FORM. PROOF OF PURCHASE OF A 80287 MATH COPROCESSOR MUST BE SUBMITTED WITH THE NARDA FORM TO VALIDATE THE WARRANTY. A WARRANTY LABOR RATE OF \$30.00 WILL BE ISSUED FOR THIS FIX.

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**29/5-2.1 PC40-III PCB REVISION 8.X - DMA CHANNEL 7 ACKNOWLEDGE SIGNAL.**

EXPANSION HARDWARE WHICH UTILIZES DMA CHANNEL 7 (DRQ7, NDACK7' ON PC40) REQUIRE A MODIFICATION TO THE PC40-III REVISION 8.X PCB.

CONNECT JUMPER, ON TRACE SIDE OF PCB, FROM U803 PIN #7 (74F138, SEE PAGE 5-26, PC40-III SERVICE MANUAL) TO CN502 PIN #32 (EXPANSION BUS, SEE PAGE 5-22, PC40-III SERVICE MANUAL). THIS MODIFICATION MAKES THE PCB REVISION 8.2C.

THIS IS CONSIDERED PART OF THIRD PARTY EXPANSION CARD INSTALLATION AND IS NOT COVERED UNDER WARRANTY.

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**END 29/5**

# Amiga Service Training Course Outline

Objective	To increase the technician's awareness of system operations and in the event of a failure, proper procedure to perform system diagnostics at the socketed chip level.
Prerequisite	The technician should have no less than four years of formal electronics training.
Outline	<p>I. A500/A2000 Operation Theory</p> <ul style="list-style-type: none"><li>A. Amiga Architecture<ul style="list-style-type: none"><li>1. Custom Chips</li><li>2. Circuit Description</li></ul></li><li>B. Troubleshooting Tips</li></ul> <p>II. A500/A2000 Hands-on Lab</p> <ul style="list-style-type: none"><li>A. Oscilloscope Usage</li><li>B. Troubleshooting Techniques</li><li>C. Defective Chip Determination</li></ul> <p>III. A500/A2000 Drive Diagnostics</p> <ul style="list-style-type: none"><li>A. Loading and Running Drive Alignment Disk</li><li>B. Physical Adjustment and Head Alignment</li><li>C. Final Drive Test<ul style="list-style-type: none"><li>1. Speed</li><li>2. Read/Write</li><li>3. Alignment</li></ul></li></ul>

# PC Service Training Course Outline

Objective	To increase the technician's awareness of system operations and in the event of a failure, proper procedure to perform system diagnostics at the socketed chip level.
Prerequisite	The technician should have no less than four years of formal electronics training.
Outline	<p>I. PC10/PC20-III Operation Theory</p> <ul style="list-style-type: none"><li>A. PC Architecture<ul style="list-style-type: none"><li>1. Custom Chips</li><li>2. Circuit Description</li></ul></li><li>B. Troubleshooting Tips</li></ul> <p>II. A500/A2000 Drive Diagnostics</p> <ul style="list-style-type: none"><li>A. Loading and Running Disk-based Diagnostics</li><li>B. System Board Troubleshooting</li><li>C. Drive Diagnostics<ul style="list-style-type: none"><li>1. Speed</li><li>2. Read/Write</li><li>3. Alignment Check</li></ul></li></ul> <p>III. PC10/PC20/PC40-III Hands-on Lab</p> <ul style="list-style-type: none"><li>A. Oscilloscope Usage</li><li>B. Troubleshooting Techniques</li><li>C. Defective Chip Determination</li></ul> <p>IV. PC 60-III Operation Theory</p> <ul style="list-style-type: none"><li>A. Board Level Architecture</li><li>B. Removal from Tower Case</li></ul> <p>V. PC60-III Hands-on Lab</p> <ul style="list-style-type: none"><li>A. Signal Tracing</li><li>B. Component Identification</li><li>C. Assembly Level Repair</li></ul>



1200 Wilson Drive  
West Chester, PA 19380  
(215) 431-9100

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To: All Service Centers

Please find the service training calendar for July through September.

Starting July 1, 1990 Commodore will be holding component level training in three (3) major cities per quarter in addition to the West Chester facility. A calendar will be released quarterly indicating the cities and dates of these seminars. There will be no charge to service centers or dealers for these classes.

The material to be covered in each course has been condensed into two (2) full days, starting at 9:00 AM and ending at 5:30 PM. It is imperative that attendees be present for the entire course in order to receive certification. Attendees should make travel arrangements accordingly. (Departure flight should be scheduled no earlier than 7:00 PM of the second day).

- Two day Amiga classes include A500/A2000 and A3000.
- Two day PC classes include PC10/20-III, PC40-III, and PC60-III.

Since class space is limited, requests should be submitted promptly.

To enroll in the course, complete the attached Training Request Form and return it to:

Commodore Business Machines  
1200 Wilson Drive  
West Chester, PA 19380  
Attention: John DiMeo, Technical Training

Please note that both an Amiga and PC class will be offered in the same city. Complete a separate application if you wish to attend both classes.

## Service Training Schedule

**July**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Amiga Service West Chester, PA	Holiday			PC Service West Chester, PA		
<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>
	PC Service West Chester, PA			Amiga Service West Chester, PA		
<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>
<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>
	Amiga Service Dallas, TX			PC Service Dallas, TX		
<b>29</b>	<b>30</b>	<b>31</b>				

Service Training Schedule

August

	1	2	3	4
<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
	Amiga Service West Chester, PA	PC Service West Chester, PA		
<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
	PC Service West Chester, PA	Amiga Service West Chester, PA		
<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>
			24	25
<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>
	Amiga Service Atlanta, GA	PC Service Atlanta, GA		
				<b>31</b>



Training Department

## Service Training Schedule

September

1						
2	3	4	5	6	7	8
				Amiga Service West Chester, PA		
9	10	11	12	13	14	15
16	17	18	19	20	21	22
			Amiga Service Sunnyvale, CA			
23	24	25	26	27	28	29/30
			PC Service Long Beach, CA			

Commodore Business Machines, Inc.

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26/3-2.1 A2000 PCB FIELD UPGRADE TO REV 4.5.  
26/3-3.1 A2620 COPROCESSOR ROM UPGRADE.  
26/3-4.1 A2000 CR REV 6.0 PCB EXPANSION BUS PROBLEMS.  
26/3-5.1 A2000 POWER SUPPLY - 12 VOLT LOAD CAN EFFECT VIDEO.  
26/3-6.1 A590 SERVICE MANUAL CBM PN# 314899-01 RELEASE.  
26/3-6.2 ENCLOSURE: A590 SERVICE MANUAL.  
26/3-7.1 A500 REVISION 6A/7 SCHEMATICS CBM PN# 314981-02 RELEASE.  
26/3-7.2 ENCLOSURE: A500 REV 6A/7 SCHEMATICS.  
26/3-8.1 A2000 REVISION 6 SCHEMATICS CBM PN# 314135-02 RELEASE.  
26/3-8.2 ENCLOSURE: A2000 REV 6 SCHEMATICS.

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26/3-1.1 A2286 REV 6.1 TO REV 8.1 BOARD EXCHANGE.

SOME A2286 BRIDGEBOARDS WILL DISPLAY PARITY ERRORS.  
THERE IS NO FIELD FIX ISSUED FOR THIS PROBLEM. PLEASE  
REQUEST A "RETURN AUTHORIZATION" NUMBER FROM YOUR  
SALES CONTACT, AND RETURN THE A2286 FOR EXCHANGE.

[ REPEAT OF 25/3-4.1 ]

26/3-2.1 A2000 PCB FIELD UPGRADE TO REV 4.5.

THE FOLLOWING INSTRUCTIONS DETAIL THE CHANGES WHICH MUST  
BE IMPLEMENTED TO UPGRADE A U.S. MANUFACTURED A2000 PCB  
FROM REV 4.0 (OR HIGHER) TO REV 4.5. CURRENT PRODUCTION  
BOARDS ARE EITHER REV 4.5 W/O NEW AGNUS OR REV 6 W/ NEW  
AGNUS. ALSO NOTE, SOME REV 6 PCBS MAY HAVE A DRAM TOWER  
AND STATIC COLUMN DRAMS, SOME MAY NOT. FIELD UPDATES  
ARE NOT RECOMMENDED ON REV 3.X PCBS.

IT IS THE RESPONSIBILITY OF THE CUSTOMER TO PAY FOR THESE  
ENHANCEMENTS.

THESE UPDATES ARE NOT REQUIRED FOR PROPER HARDWARE  
OPERATION, AND IT IS SOLELY WITHIN THE CUSTOMERS  
DISCRETION TO HAVE THEM IMPLEMENTED. ANY PROBLEMS  
RESULTING FROM IMPROPER INSTALLATION OF THESE UPDATES  
BY THE SERVICE CENTER WILL VOID THE CREDIT ISSUED FOR  
A RETURNED REPAIRABLE UNIT.

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26/3-2.1 A2000 PCB FIELD UPGRADE TO REV 4.5. (CONT)

- 1) THE FOLLOWING COMPONENTS WILL EITHER NOT BE INSTALLED, OR ARE TO BE REMOVED IF INSTALLED.

R901, C917, C902 (SHOULD NOT BE INSTALLED, LOCATED LEFT OF CN601, LAST EXPANSION CONNECTOR ON AMIGA BUS, NEAR PIN 1.)

C910, C911 (FIX FOR HYTEK KEYBOARDS, LOCATED OFF KEYBOARD CONNECTOR, CN300.)

C905, C908 (C908 LOCATED ABOVE CRYSTAL X1, C905 LOCATED BELOW GARY PIN 20.)

C230, C240 (LOCATED ABOVE U204, U303, THE TWO ICS BETWEEN THE 34 PIN DRIVE CONNECTOR AND THE 8520 AT U301.)

- 2) 1.2 KICKSTART ROM IS REPLACED WITH 1.3 KICKSTART ROM.  
(1.3 ROM IS CBM PN# 315093-02.)
- 3) INSTALL RP904, RP905, RP906 ONLY IF U205 AND U206 ARE 74HC244 TYPE ICS. (RESISTOR PACK IS 4.7K OHM X 5, 6 PIN, CBM PN# 902441-31.)

DO NOT INSTALL IF U205 AND U206 ARE HCT TYPE 244. RP905 IS LOCATED BETWEEN U205 AND U206, RP906 IS LOCATED BETWEEN PAULA AND DENISE, RP904 IS LOCATED TO THE RIGHT OF DENISE.

- 4) ADD .01 uF CERAMIC CAP ON J300. ADD THIS CAP ON SOLDER SIDE OF PCB, FROM PIN 12 (MIDDLE PIN ON CONNECTOR) TO GROUND (USE EITHER OF THE GROUND PADS LOCATED ON THE SOLDER SIDE, DOWN AND TO THE RIGHT, ABOVE PAULA BETWEEN PINS 46 AND 48.).
- 5) ADD 3.3K OHM, 1/4W RESISTOR TO U605, FROM PIN 11 TO PIN 20.
- 6) ADD 470 OHM, 1/4W RESISTOR TO D800, CATHODE SIDE, TO THE SECOND PAD FROM THE LEFT, UNDER CN605. (D800 IS LOCATED TO THE LEFT OF THE REAL TIME CLOCK IC AT U801.)

NOTE: ON REV 4.3 AND ABOVE THIS RESISTOR IS ON PCB AS R1000, LOCATED TO THE LEFT OF Q302.

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26/3-2.1 A2000 PCB FIELD UPGRADE TO REV 4.5. (CONT)

- 7) IF R5719 IS NOT PRESENT ( LOCATED OFF PIN 1 OF CN400, POWER CONNECTOR.) ADD 470 OHM RESISTOR BETWEEN VCC AND CPU SIDE OF R106. (USE PAD LOCATED TO THE RIGHT OF U100, THE 68000, BETWEEN PINS 11 AND 12, AND THE PAD ON THE GROUND TRACE WHICH RUNS UNDER PIN 14 OF THE 68000.)
- 8) REPLACE GARY IC, THE 5719, AT U102, WITH A MOS MANUFACTURED TYPE, IF IT IS A TOSHIBA MANUFACTURED TYPE. PART NUMBER FOR GARY IS 318072-01, ONLY MOS TYPE ARE IN STOCK.

[REPEAT OF 25/3-1.1]

26/3-3.1 A2620 COPROCESSOR ROM UPGRADE.

NEW ROMS ARE AVAILABLE FROM THE PARTS DEPARTMENT TO UPGRADE THE A2620 FOR USE WITH SOME THIRD PARTY HARDWARE ADD-ON BOARDS (GVP TYPE). THIS A RUNNING CHANGE AND IS NOT COVERED UNDER WARRANTY.

CBM PART NUMBERS FOR THE NEW ROMS ARE # 390282-02 FOR IC AT U4, AND 390283-02 FOR IC AT U5. BOTH ROMS MUST BE CHANGED FOR THE UPGRADE.

26/3-4.1 A2000 CR REV 6.0 PCB EXPANSION BUS PROBLEMS.

IF PROBLEMS ON A2000 CR REV 6.0 PCB'S OCCUR, SUCH AS GURU CODES, AUTO-CONFIG OR SYSTEM HANGING UP, WITH SOME THIRD PARTY ADD-ON CARDS IT MAY BE THE RESULT OF THE MOTOROLA TYPE 68000 CPU IC'S WHICH HAVE A MASK CODE OF 0B26

PARTS DEPARTMENT IS STOCKING SIGNETICS TYPE 68000'S UNDER PART NUMBER 390084-03, DEALER BILLING IS \$18.50. PLEASE NOTE: NO REIMBURSHMENTS WILL BE ISSUED FOR 68000 ICS NOT PURCHASED FROM COMMODORE. IN ADDITION ANY MOTOROLA 68000 ICS RETURNED FOR CREDIT WHICH DO NOT HAVE A MASK CODE OF 0B26 WILL BE RETURNED TO THE SERVICE CENTER WITH NO CREDIT ISSUED. IF REPLACING THE 68000 WITH A SIGNETICS TYPE DOES NOT CORRECT THE PROBLEM THEN THE PCB WILL HAVE TO BE REPLACED.

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## 26/3-4.1 A2000 CR REV 6.0 PCB EXPANSION BUS PROBLEMS. (CONT)

A SPECIAL WARRANTY RATE OF \$30.00 WILL BE PAID FOR REPLACEMENT OF THE SOCKETED MOTOROLA 68000'S WHICH HAVE A MASK CODE OF 0B26.

IF PROBLEMS PERSIST AFTER THE 68000 IS REPLACED, THE MOTHER BOARD WILL HAVE TO BE EXCHANGED FOR THE CURRENT REVISION 6.2, A2000 PCB ASSY.

## 26/3-5.1 A2000 POWER SUPPLY - 12 VOLT LOAD CAN EFFECT VIDEO.

A2000 UNITS WITH PHI HONG TYPE POWER SUPPLIES WHICH ARE NOT PLACING A SIGNIFICANT LOAD ON THE 12 VOLT SOURCE (NO HARD DRIVE OR OTHER ADD-ONS USING 12 VOLTS) MAY EXHIBIT VIDEO PROBLEMS. CONFIGURATIONS WITH A HARD DISK DRIVE OR OTHER THIRD PARTY EXPANSION HARDWARE WHICH USES THE 12 VOLT SOURCE WILL NOT HAVE VIDEO FLICKER AND DO NOT REQUIRE THIS CHANGE.

VIDEO NOISE OR FLICKERING, WHICH OCCURS DURING DISK OR PROCESSOR ACTIVITY CAN BE IMPROVED BY RE-OREINTING OR BY REMOVING AND REPLACING WITH THE SAME VALUE, RESISTOR R215 (CBM PN#901550-118 1 OHM, 5%, 1/2W) AS DETAILED BELOW.

NOTE: THIS UPDATE IS FOR UNITS WITH "PHI HONG" TYPE POWER SUPPLIES ONLY.

LOCATE R215 (ABOVE PIN 40 OF 8520 AT U300), CLIP OR UNSOLDER THE LEFT-HAND LEAD OF R215 (SIDE TOWARD EMI200). AND THEN SOLDER A PIECE OF JUMPER WIRE OR RESISTOR LEAD TO THE FREE END OF R215, EXTENDING IT ENOUGH (3/4") TO REACH THE FEEDTHRU HOLE LOCATED BETWEEN EMI310 AND EMI301. (THIS FEEDTHRU HOLE IS ABOUT 1/4" ABOVE THE RIGHT SIDE OF R310.)

THE LEFT-HAND LEAD OF R215, AFTER BEING CLIPPED, WILL BE TOO SHORT TO REACH THE FEEDTHRU HOLE. YOU MAY EXTEND THE LEAD, AS DESCRIBED ABOVE, OR REPLACE R215 WITH A NEW RESISTOR (1 OHM, 5%, 1/2W) PLACING IT MID-WAY BETWEEN THE RIGHT SIDE FEEDTHRU HOLE OF R215 AND THE FEEDTHRU HOLE BETWEEN EMI310 AND EMI301. THERE ARE NO EXPOSED COMPONENTS OR TRACES BETWEEN THE TWO POINTS, HOWEVER A GOOD PROCEDURE WOULD INCLUDE INSULATING BOTH SIDES OF THE RESISTOR LEADS WITH SHRINK TUBING BEFORE SOLDERING.

A WARRANTY RATE OF \$30.00 WILL BE CREDITED FOR THIS UPGRADE.

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26/3-6.1 A590 SERVICE MANUAL CBM PN# 314899-01 RELEASE.

MAILED WITH TECHTOPICS ISSUE 26, FOR AMIGA AUTHORIZED SERVICE CENTERS ONLY, IS THE NEW A590 SERVICE MANUAL.

26/3-6.2 ENCLOSURE: A590 SERVICE MANUAL.

ENCLOSED IN TECHTOPICS ISSUE 26, #314899-01 A590 SERVCE MANUAL.

26/3-7.1 A500 REVISION 6A/7 SCHEMATICS CBM PN# 314981-02 RELEASE.

MAILED WITH TECHTOPICS ISSUE 26, FOR AMIGA AUTHORIZED SERVICE CENTERS ONLY, ARE THE A500 REV 6A/7 SCHEMATICS.

26/3-7.2 ENCLOSURE: A500 REV 6A/7 SCHEMATICS.

ENCLOSED IN TECHTOPICS ISSUE 26, #314981-02 A500 REV 6A/7 SCHEMATICS.

26/3-8.1 A2000 REVISION 6 SCHEMATICS CBM PN# 314135-02 RELEASE.

MAILED WITH TECHTOPICS ISSUE 26, FOR AMIGA AUTHORIZED SERVICE CENTERS ONLY, ARE THE A2000 REV 6 SCHEMATICS.

26/3-8.2 ENCLOSURE: A2000 REV 6 SCHEMATICS.

ENCLOSED IN TECHTOPICS ISSUE 26, #314135-02 A2000 REV 6 SCHEMATICS.

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END 26/3.

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## **PC**

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26/5-1.1 PC10-III REV 6 PCB ASSEMBLY - EXPANSION BUS PROBLEMS.  
26/5-2.1 PC30/40-III VGA VIDEO PROBLEM IN 8MHZ MODE.  
26/5-3.1 PC40-III BIOS V2.01 UPGRADE ROM RELEASE.  
26/5-4.1 PC40-III DIAGNOSTIC KIT - CONTENTS CHANGE.  
26/5-5.1 PC40-III PCB EXCHANGE KIT.  
26/5-6.1 1402 MONITOR SERVICE MANUAL CBM PN# 602249-99 RELEASE.  
26/5-6.2 ENCLOSURE: 1402 MONITOR SERVICE MANUAL.  
26/5-7.1 1403 MONITOR SERVICE MANUAL CBM PN# 314882-01 RELEASE.  
26/5-7.2 ENCLOSURE: 1403 MONITOR SERVICE MANUAL.

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26/5-1.1 PC10-III REV 6 PCB ASSEMBLY - EXPANSION BUS PROBLEMS.

PROBLEMS WITH THIRD PARTY HARDWARE ADD-ONS USING PC10-III REV 6 PCB ASSEMBLIES (ALSO USED IN PC20-III AND COLT), HAVE BEEN TRACED TO THE "IOREADY" SIGNAL WHICH WILL TRI-STATE WHEN IT IS NOT PULLED LOW BY PVC4.

A FIELD FIX HAS NOT BEEN ISSUED FOR THIS PROBLEM. PCB# 312625-01 (MARKED REV 6.2) ARE AVAILABLE FOR EXCHANGES. THE NORMAL PC WARRANTY WILL COVER THE EXCHANGE.

26/5-2.1 PC30/40-III VGA VIDEO PROBLEM IN 8MHZ MODE.

FOR PC30-III AND PC40-III PCB REVISIONS 8.0, 8.1, AND 8.2 (CBM PN# 313055-01) DISPLAYING VGA VIDEO PROBLEMS, WHICH OCCUR WHILE OPERATING IN 8MHZ MODE MAY BE CORRECTED WITH THE FOLLOWING FIELD FIX. NOTE, THE SYMPTOMS ARE SCREEN BREAKING UP AND/OR "SNOW" ON THE SCREEN.

THE PCB REVISION NUMBER BECOMES 8.2B WITH THIS FIX.

- 1) REMOVE RESISTOR R120 (51 OHMS), AND REPLACE WITH 1K OHM RESISTOR.
- 2) REMOVE RESISTOR R907 (51 OHMS), AND REPLACE WITH 300 OHM RESISTOR.

PLEASE NOTE: PCB FOR PC30/40-III IS A FOUR LAYERED BOARD, BE CAREFUL, ANY DAMAGE TO THE MAIN ASSEMBLY DUE TO IMPROPER REPAIR TECHNIQUES BY THE SERVICE CENTER WILL VOID THE CREDIT FOR A RETURNED REPAIRABLE UNIT.

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26/5-3.1 PC40-III BIOS V2.01 UPGRADE ROM RELEASE.

TWO NEW ROMS FOR THE PC40-III (AND PC30-III/COLT 286) ARE AVAILABLE FROM THE PARTS DEPARTMENT.

390339-03 IC BIOS V2.01 - LOW, AND 390340-03 IC BIOS V2.01 - HIGH HAVE A DEALER BILLING OF \$13.20. THIS IS A RUNNING CHANGE AND IS NOT COVERED UNDER WARRANTY.

THE FOLLOWING CHANGES HAVE BEEN MADE TO THE NEW ROMS.

- 1) FDD RECALIBRATION PROBLEM WHICH CAUSED FAILURE IN DOS DISKCOPY PROGRAM HAS BEEN CORRECTED.
- 2) FLOPPY DISK CONFIGURATION PROBLEM ON HIGH DENSITY DRIVE HAS BEEN CORRECTED.
- 3) COMPATIBILITY PROBLEM IN GETTING OUT OF 286 PROTECTED MODE WHICH CAUSED MACHINE TO REBOOT WHEN RUNNING SOME THIRD PARTY SOFTWARE HAS BEEN FIXED.
- 4) CP/M 86 V1.0/4A BOOT PROBLEM. CP/M RUNS OUT OF STACK SPACE, NOT A BIOS PROBLEM, FIX ALLOWS CP/M TO BOOT, BUT IT CAN STILL CRASH DURING OPERATION.

26/5-4.1 PC40-III DIAGNOSTIC KIT - CONTENTS CHANGE.

PC40-III DIAGNOSTIC KIT, PN# 314119-01, NO LONGER CONTAINS THE GREEN MOUSE 9 PIN FEMALE CONNECTOR, PN# 314119-05. IT IS INCLUDED IN THE LISTING OF CONTENTS ON PAGE ONE OF THE PC40-III DIAGNOSTIC MANUAL, HOWEVER IT WILL NOT BE INCLUDED IN THE PACKAGE.

THIS CONNECTOR WAS NOT A MOUSE CONNECTOR, IT WAS A SERIAL BUS BACK CONNECTOR FOR THIRD PARTY SERIAL CARDS.

26/5-5.1 PC40-III PCB EXCHANGE.

WHEN PC40-III PCB ASSEMBLIES REVISION 7.XX ARE REPLACED WITH PC40-III PCB ASSEMBLIES REVISION 8.XX A CHANGE IN THE PCB LAYOUT WHICH REVERSES PINS 16 AND 18 ON CN901 ( HD INTERFACE CONNECTOR ) WILL CAUSE THE HARD DRIVE NOT TO OPERATE UNLESS YOU REFORMAT THE HARD DRIVE.

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26/5-5.1      PC40-III PCB EXCHANGE. (CONT)

A SPECIAL KIT, CBM PN# 314672-01, HAS BEEN ISSUED WHICH CONTAINS A NEW HARD DRIVE CABLE THAT CORRECTS PROBLEM WITHOUT HAVING TO REFORMAT THE HARD DRIVE.

PC40-III PCB EXCHANGE KIT # 314672-01 CONTAINS:

313055-01 PC40-III PCB ASSY R8.XX  
314672-02 HARD DRIVE CABLE ASSY (TWISTED)  
314672-03 INSTRUCTION SHEET

PLEASE REFER TO THE CHART BELOW BEFORE REPLACING THE PC40-III PCB ASSY.

ORIGINAL PCB	REPLACEMENT PCB	INSTRUCTIONS
REV 7.XX	REV 7.XX	USE ORIGINAL HD CABLE
REV 7.XX	REV 8.XX	USE TWISTED HD CABLE
REV 8.XX	REV 8.XX	USE ORIGINAL HD CABLE
REV 8.XX	REV 7.XX	USE TWISTED HD CABLE

26/5-6.1      1402 MONITOR SERVICE MANUAL CBM PN# 602249-99 RELEASE.

MAILED WITH TECHTOPICS ISSUE 26, FOR PC AUTHORIZED SERVICE CENTERS ONLY, IS THE 1402 MONITOR SERVICE MANUAL.

26/5-6.2      ENCLOSURE: 1402 MONITOR SERVICE MANUAL.

ENCLOSED WITH TECHTOPICS ISSUE 26, # 602249-99 MONITOR SERVICE MANUAL.

26/5-7.1      1403 MONITOR SERVICE MANUAL CBM PN# 314882-01 RELEASE.

MAILED WITH TECHTOPICS ISSUE 26, FOR PC AUTHORIZED SERVICE CENTERS ONLY, IS THE 1403 MONITOR SERVICE MANUAL.

26/5-7.2      ENCLOSURE: 1403 MONITOR SERVICE MANUAL.

ENCLOSED IN TECHTOPICS ISSUE 26, #314882-01 1403 SERVICE MANUAL.

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25/3-1.1 A2000 PCB FIELD UPGRADE TO REVISION LEVEL 4.5.

25/3-2.1 INSTALLATION OF NEW "FATTER" AGNUS IN THE AMIGA 2000.

25/3-3.1 A2000 GURU MESSAGE ON POWER UP W/ REV 6 PCB.

25/3-4.1 A2286 REV 6.1 TO REV 8.1 BOARD EXCHANGE.

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25/3-1.1 A2000 PCB FIELD UPGRADE TO REVISION LEVEL 4.5.

THE FOLLOWING INSTRUCTIONS DETAIL THE CHANGES WHICH MUST BE IMPLEMENTED TO UPGRADE A U.S. MANUFACTURED A2000 PCB FROM REVISION 4.0 (OR HIGHER) TO REVISION 4.5. CURRENT PRODUCTION BOARDS ARE EITHER REV 4.5 W/O NEW AGNUS OR REV 6 WITH NEW AGNUS. ALSO NOTE, SOME REV 6 PCBS MAY HAVE DRAM TOWER AND STATIC COLUMN DRAMS, SOME MAY NOT. FIELD UPGRADES ARE NOT RECOMMENDED ON REV 3.X PCBS.

IT IS THE RESPONSIBILITY OF THE CUSTOMER  
TO PAY FOR THESE ENHANCEMENTS.

THESE UPGRADES ARE NOT REQUIRED FOR PROPER HARDWARE OPERATION, AND IT IS SOLELY WITHIN THE CUSTOMERS DISCRETION TO HAVE THEM IMPLEMENTED. ANY PROBLEMS RESULTING FROM IMPROPER INSTALLATION OF THESE UPGRADES BY THE SERVICE CENTER WILL VOID THE CREDIT ISSUED FOR A RETURNED REPAIRABLE UNIT.

- 1) THE FOLLOWING COMPONENTS WILL EITHER NOT BE INSTALLED, OR WILL BE REMOVED IF INSTALLED.

R901, C917, C902 (SHOULD NOT BE INSTALLED, LOCATED LEFT OF CN601, LAST EXPANSION CONNECTOR ON AMIGA BUS, NEAR PIN 1.)  
C910, C911 (FIX FOR HYTEK KEYBOARDS, LOCATED OFF KEYBOARD CONNECTOR, CN300.)  
C905, C908 (C908 LOCATED ABOVE CRYSTAL X1, C905 LOCATED BELOW GARY PIN20.)  
C230, C240 (LOCATED ABOVE U204, U303, THE TWO ICS BETWEEN THE 34 PIN DRIVE CONNECTOR AND THE 8520 U301.)

- 2) 1.2 KICKSTART ROM IS REPLACED WITH 1.3 KICKSTART ROM.  
( 1.3 ROM IS PN# 315093-02)
- 3) INSTALL RP904, RP905, RP906 ONLY IF U205 AND U206 ARE 74HC244 TYPE ICS. ( RESISTOR PACK IS 4.7K OHM X 5, 6 PIN, PN# 902441-31 ). DO NOT INSTALL IF U205 AND U206 ARE HCT TYPE 244. RP905 IS LOCATED BETWEEN U205 AND U206, RP906 IS LOCATED BETWEEN PAULA AND DENISE, RP904 IS LOCATED TO THE RIGHT OF DENISE.

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**25/3-1.1 A2000 PCB FIELD UPGRADE TO REVISION LEVEL 4.5. (CONT)**

- 4) ADD .01 uF CAP ON J300. ADD THIS CAP ON SOLDER SIDE OF PCB, FROM PIN 2 (MIDDLE PIN ON CONNECTOR) TO GROUND (USE EITHER OF THE GROUND PADS LOCATED, ON THE SOLDER SIDE, DOWN AND TO THE RIGHT, ABOVE PAULA BETWEEN PINS 46 AND 48).
- 5) ADD 3.3K OHM RESISTOR TO U605, FROM PIN 11 TO PIN 20.
- 6) ADD 470 OHM RESISTOR TO D800, CATHODE SIDE, TO THE SECOND PAD FROM THE LEFT, UNDER CN605. (D800 IS LOCATED TO THE LEFT OF THE REAL TIME CLOCK IC AT U801).  
NOTE: ON REV 4.3 AND ABOVE THIS RESISTOR IS ON PCB AS R1000, LOCATED TO THE LEFT OF Q302.
- 7) IF R5719 IS PRESENT (LOCATED OFF PIN1 OF CN400, PWR CONN), ADD 470 OHM RESISTOR BETWEEN VCC AND CPU SIDE OF R106. ( USE PAD LOCATED TO THE RIGHT OF U100, THE 68000, BETWEEN PINS 11 AND 12, AND THE PAD ON THE GROUND TRACE WHICH RUNS UNDER PIN 14 OF THE 68000.)
- 8) REPLACE GARY IC, THE 5719, AT U102, WITH A MOS MANUFACTURED TYPE, IF IT IS A TOSHIBA MANUFACTURED TYPE. PART NUMBER FOR GARY IS 318072-01, ONLY MOS TYPE ARE IN STOCK.

**25/3-2.1 INSTALLATION OF NEW "FATTER" AGNUS IN THE AMIGA 2000.**

THE NEW "FATTER" AGNUS 8372 IC (PN#318069-02) WHICH CAN ADDRESS 1 MEGABYTE OF CHIP RAM WILL REQUIRE THE FOLLOWING MODIFICATIONS TO THE A2000 PCB FOR PROPER OPERATIONS. WITHOUT THESE MODIFICATIONS THE IC WILL ADDRESS ONLY 512K OF CHIP RAM AND OPERATE ONLY IN NTSC MODE. NOTE: A2000 REV 6 PCB COMES JUMPERED FOR 1 MEG.

NOTE: USE CORRECT IC EXTRACTOR TOOL WHEN REMOVING F. AGNUS FROM THE SOCKET. THIS TOOL IS AVAILABLE FROM THE PARTS DEPT. PART NUMBER IS 314874-01, COST IS \$20.00.

- 1) LOCATE JUMPER J101 (TO THE LOWER RIGHT OF POWER CONNECTOR CN400). MOVE SHORTING BLOCK TO THE LEFT, SHORTING PINS 2 AND 3. NOTE: SEE PAGE 13 OF A2000 SYSTEM SCHEMATICS, THIS JUMPER WILL ENABLE ADDRESS LINE 19 FROM THE 68000 WHICH CONTROLS THE 1 MEG ADDRESS RANGE.
- 2) LOCATE JUMPER PAD J500 (TO THE LOWER LEFT OF THE 8520 AT U301). THIS IS A TWO (2) PAD JUMPER WITH A TRACE CONNECTING THE TWO PADS. WITH A SHARP EXACTO KNIFE CUT THE TRACE WHICH CONNECTS THE PADS. BE CAREFUL NOT TO ALLOW THE BLADE TO SLIP AND CUT ANOTHER TRACE. NOTE: SEE PAGE 9 OF A2000 SYSTEM SCHEMATICS, CUTTING THIS TRACE KEEPS THE EXRAM SIGNAL FROM BEING TIED TO GROUND. NOTE: ON SOME PCB'S THIS MAY BE A PORT TYPE JUMPER, IN WHICH CASE YOU REMOVE THE SHORTING BLOCK.

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## 25/3-2.1 INSTALLATION OF NEW "FATTER" AGNUS IN THE AMIGA 2000. (CONT)

3) LOCATE JUMPER J102 (TO THE RIGHT OF J101, ABOVE X1 CRYSTAL)  
CLOSED = NTSC, OPEN = PAL. CUT CONNECTING TRACE FOR PAL ONLY.

A DIAGRAM SHOWING THE LOCATIONS OF THESE JUMPERS WILL BE PACKED WITH EACH "FATTER" AGNUS (PN# 318069-02) SHIPPED.

## 25/3-3.1 A2000 GURU MESSAGE ON POWER UP W/ REV 6 PCB.

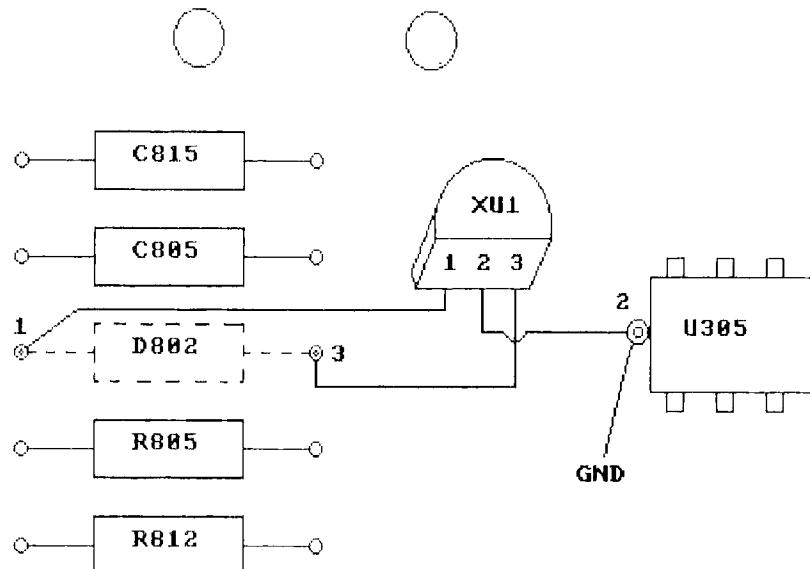
NEW DRAMS MAY RETAIN DATA FOR AS LONG AS FIVE (5) MINUTES AFTER POWER OFF. AN ADVISORY MESSAGE ON POWER UP MAY INDICATE THAT THE ERROR MESSAGE GENERATED BY POWER OFF HAS BEEN RETAINED. PRESSING THE LEFT MOUSE BUTTON WILL ALLOW THE SYSTEM TO RESUME A NORMAL START UP.

A MITSUMI PST518B, RESET IC (CBM PN# 328156-02) SHOULD BE INSTALLED AS FOLLOWS:

LOCATE U305 (TO THE LEFT OF CN303, 34 PIN DRIVE CABLE).  
LOCATE D802 (DOWN, TO THE RIGHT OF U305).  
INSTALL PST518B (DESIGNATED XU1) USING INSULATION TUBING AS REQUIRED TO PREVENT THE POSSIBILITY OF SHORTS.

SOLDER PIN 1 OF XU1 TO +5 VOLT SIDE OF DIODE D802.  
SOLDER PIN 2 OF XU1 TO GND, USE PLATED HOLE AT THE BASE OF IC U305.  
SOLDER PIN 3 OF XU1 TO THE ANODE SIDE OF DIODE D802.

DIAGRAM 25/3-3.2



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25/3-3.1 A2000 GURU MESSAGE ON POWER UP W/ REV 6 PCB. (CONT)

THIS FIX SHOULD BE DONE IF REQUESTED BY THE CUSTOMER,  
AND WILL BE COVERED, AS A COMPONENT LEVEL REPAIR,  
UNDER WARRANTY.

25/3-4.1 A2286 REV 6.1 TO REV 8.1 BOARD EXCHANGE.

SOME A2286 BRIDGEBOARDS WILL DISPLAY PARITY ERRORS.

THERE IS NO FIELD FIX ISSUED FOR THIS PROBLEM. PLEASE  
REQUEST A "RETURN AUTHORIZATION" NUMBER FROM YOUR  
SALES CONTACT, AND RETURN THE A2286 FOR EXCHANGE.

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25/5-1.1 PC40-III VIDEO REPAIR TIP: IC/SOCKET CONTACT PROBLEMS.

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25/5-1.1 PC40-III VIDEO REPAIR TIP: IC/SOCKET CONTACT PROBLEMS.

THE PC40-III VIDEO CONTROLLER CHIP, PVGA-1A PN# 390302-01, LOCATED AT U101, CAN EXHIBIT A NUMBER OF DIFFERENT SYMPTOMS IF A POOR CONTACT EXISTS BETWEEN THE IC AND THE 100 PIN PLCC ( PLASTIC LEADED CHIP CARRIER ).

THE SYMPTOMS INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

- NO VIDEO	- LOSS OF VIDEO SYNC
- SCRAMBLED TEXT	- CONTINUOUS SCROLLING OF SCREEN

NOTE: VIDEO MODE SWITCHES ON THE BACK OF UNIT SHOULD BE SET TO VGA COLOR ( 1 UP, 2 DOWN, 3 DOWN ), SEE PAGE 64 IN PC40-III OPERATIONS GUIDE. THIS MODE INSURES THAT SOFTWARE USING COLOR MODES WILL RUN ON A MONOCHROME MONITOR.

IT WILL BE NECESSARY TO REMOVE THE DRIVE SUB-CHASSIS TO LOCATE U101.

- 1) TO INSURE PROPER CONTACT BETWEEN THE VIDEO CONTROLLER IC AND THE 100 PIN SOCKET (PLCC), INSERT THE IC ALL THE WAY DOWN INTO THE SOCKET BY APPLYING PRESSURE TO THE CORNERS OF THE IC WITH YOUR FINGERS.

WARNING: DO NOT ATTEMPT TO REMOVE THE VIDEO CONTROLLER IC FROM THE SOCKET WITHOUT THE PROPER IC EXTRACTOR. THIS TOOL IS AVAILABLE FROM COMMODORE PARTS - PN# 314874-01, DEALER COST IS \$20.00.

- 2) CHECK THAT GOOD CONTACT EXISTS WITH ALL SOCKETTED CHIPS.
- 3) USE STATIC-PROTECTION PROCEDURES, ( SERVICER AND HARDWARE MUST BE AT THE SAME VOLTAGE POTENTIAL TO AVOID ELECTRO-STATIC DISCHARGE ).

[ NOTE THIS BULLETIN WAS APPENDED TO THE TECHTOPICS ISSUE 24 MAILING, FIRST WEEK OF APRIL. ]

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END 25/5.

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- 24/3-1.1 USING A2090A WITH 1.3 WORKBENCH AND 1.2 ROM.
- 24/3-2.1 3.5 FLOPPY DISKETTE MEDIA.
- 24/3-3.1 A2000 74ALS245 BUS TRANSCEIVER RESISTOR.
- 24/3-4.1 A500/A2000 SYSTEM TEST RELEASE.
- 24/3-4.2 ENCLOSURE: A500/A2000 SYSTEST PROGRAM DISKETTE 314879-01.
- 24/3-4.3 ATTACHMENT: A500/A2000 SYSTEST INSTRUCTIONS.

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- 24/3-1.1 USING A2090A WITH 1.3 WORKBENCH AND 1.2 ROM.

THE A2090A HARD DRIVE CONTROLLER WILL WORK WITH THE 1.3 WORKBENCH AND THE 1.2 ROM. YOU MUST REMOVE THE TWO EPROMS, U50, AND, U51 FROM THE A2090A AND LEAVE THE SOCKETS BLANK.

NOTE: ON THE INSTALL OPTIONS DO NOT DELETE THE PRINTER DRIVERS OR KEY MAPS. THEY ARE ON THE EXTRAS DISKETTE.

- 24/3-2.1 3.5 FLOPPY DISKETTE MEDIA.

ONLY HIGH QUALITY DISKETTES SHOULD BE USED WITH AMIGA 3.5 FLOPPY DISK DRIVES.

DISKETTES SUCH AS, SONY, MAXELL, AND FUJI, ARE ALL HIGH QUALITY AND SHOULD BE USED WHEN RUNNING TESTS ON AMIGA DRIVES.

THIRD PARTY SOFTWARE VENDORS HAVE BEEN KNOWN TO USE LOW QUALITY DISKETTES IN BULK PRODUCTION. THIS CAN CREATE PROBLEMS LOADING THE SOFTWARE.

DRIVE ASSEMBLIES RETURNED TO THE PARTS DEPOT ARE BEING TESTED BY COMMODORE TECHNICIANS AND COULD BE RETURNED TO THE SERVICE CENTER IF FOUND TO BE FREE OF DEFECTS.

- 24/3-3.1 A2000 74ALS245 BUS TRANSCEIVER RESISTOR.

AMIGA A2000 SYSTEMS USING SOME EXPANSION HARDWARE, SUCH AS A2090A, IN CONJUNCTION WITH A COPROCESSOR CARD ( A2620 ) REQUIRE A 3.3K OHM RESISTOR TO BE SOLDERED FROM PIN 11 TO PIN 20 ON THE 74ALS245 BUS TRANSCEIVER CHIP LOCATED AT U605. THIS RESISTOR IS TO BE CONSIDERED PART OF STANDARD INSTALLATION PROCEDURES PERFORMED BY AUTHORIZED SERVICE CENTERS WHEN INSTALLING A A2620 CARD.

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24/3-4.1 A500/A2000 SYSTEM TEST RELEASE.

INCLUDED WITH TECHTOPICS ISSUE 24 MAILING PLEASE FIND THE AMIGA SYSTEM TEST DISKETTE, COMMODORE PART NUMBER 314879-01, AND INSTRUCTION SHEET. THE AMIGA SYSTEST DISKETTE IS ONLY MAILED TO SERVICE CENTERS WHICH ARE AMIGA AUTHORIZED.

24/3-4.2 ENCLOSURE: A500/A2000 SYSTEST PROGRAM DISKETTE 314879-01.

MAILED WITH TECHTOPICS ISSUE 24, TO AMIGA AUTHORIZED SERVICE CENTERS.

24/3-4.3 ATTACHMENT: A500/A2000 SYSTEST INSTRUCTIONS.

ATTACHED IN TECHTOPICS ISSUE 24 PLEASE FIND ONE (1) PAGE OF INSTRUCTIONS FOR THE A500/A2000 SYSTEST PROGRAM.

---

END 24/3.

# A500/A2000 SYSTEM TEST INSTRUCTIONS

System Test is an auto-boot diskette. Once booted its own cli window will open. Type the commands listed below in order to run each test.

## **KEYTEST**

- Full keyboard test
- press all keys to confirm proper operation
- click left mouse button in upper left corner to EXIT

## **KB**

- Keyboard matrix test
- pressing the keys indicated by the program will test the matrix and seven dedicated key functions

## **SCREENTEST**

- Screentest is low resolution graphic screen made up of 6 bit planes. Used to test RGB linearity and HALF BRIGHTS.
- screentest will display a RGB COLOR BAR scale and a 16 level gray scale in both normal and half bright mode. Normal scales are on top.
- Press space bar to EXIT screen.

## **SHOW.HIRES.TEST.**

- Hires.Test is a 4 bit plane high resoiuion 640 by 400 screen that displays NTSC color bars, 8 level gray scales, horizontal resolution lines, and an interlace test.
- Press space bar to EXIT screen.

## **SHOW BALLOON**

- Balloon is a 6 bit plane hold and modify picture used to verify proper HAM decoding.
- This will test for a bad Agnus or Denise chip.
- Press space bar to EXIT screen.

## **CUBEROTE**

- Cuberote is an animated cube whose speed and direction is controlled by the mouse X-Y position. The cube is blue with shading of three visible sides. Cuberote uses double buffering for a smooth animation. Direct manipulation of the Copper List permits the display of 16 shades blue while only using 2 bit planes.
- Click left mouse button in upper left corner to EXIT screen.

## **SYSTEST**

- Systest will run the following test: Realtime clock, Blit, Chip/Fast Ram Sprites/Bliter, and Disk I/O.
- Reboot computer to EXIT program.

Type the following for customizing systest.

SYSTEST 246d	; A500 NO A501	
SYSTEST 2436cd	; A500 WITH A501 OR A2000	
SYSTEST 1245679d	; A500 NO A501	BURN-IN
SYSTEST 12345679cd	; A500 WITH A501 OR A2000	BURN-IN
SYSTEST 12345678d	; A500 NO A501	AGING
SYSTEST 12345678cd	; A500 WITH A501 OR A2000	AGING

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24/5-0.0 INDEX - PC SECTION TECHTOPICS ISSUE 24.

24/5-1.1 AUTO-CONFIG - THIRD PARTY MOUSES.

24/5-2.1 PC40-III SERVICE MANUAL RELEASE.

24/5-2.2 ENCLOSURE: PC40-III SERVICE MANUAL 314134-01.

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24/5-1.1 AUTO-CONFIG - THIRD PARTY MOUSES.

THE PC10-III, PC20-III AND COLT HAVE A MOUSE PORT WHICH IS USED BY THE COMMODORE 1352 MOUSE.

THIRD PARTY MOUSE CARDS USED IN THE EXPANSION SLOTS OVERRIDE THE BUILD IN MOUSE DRIVER WHEN THE SYSTEM RUNS AUTO-CONFIG PROGRAM DURING THE POWER UP SEQUENCE.

THE COMMODORE MOUSE USES INTERRUPT 2, THIS CONFLICTS WITH CERTAIN THIRD PARTY MOUSES, SUCH AS LOGITECH, WHICH ALSO USE INTERRUPT 2.

A PROGRAM IS AVAILABLE FROM SERVICE WHICH DISABLES COMMODORE MOUSE INTERRUPT AND ALLOWS THE THIRD PARTY MOUSE TO USE INTERRUPT 2.

REFER TO CTOC SECTION 7 DOWNLOAD, OF CURRENT ON-LINE ISSUE 25 TECHTOPICS FOR INSTRUCTIONS.

CHGMOUSE - IS THE PROGRAM FILE.

README - FILE CONTAINS INFORMATION ON THE PROGRAM.

24/5-2.1 PC40-III SERVICE MANUAL RELEASE.

INCLUDED WITH TECHTOPICS ISSUE 24 MAILING PLEASE FIND THE PC40-III SERVICE MANUAL. MAILED ONLY TO SERVICE CENTERS WHICH ARE PC AUTHORIZED.

24/5-2.2 ENCLOSURE: PC40-III SERVICE MANUAL 314134-01.

MAILED WITH TECHTOPICS ISSUE 24, TO PC AUTHORIZED SERVICE CENTERS.

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END 24/5.

SEASONS GREETINGS

FROM

THE STAFF

SERVICE DEPT

Haley Sea Jr

A Lehmkuhl

Bogosian

Dawn Althouse

Scott Jowalski

of H. DiNero

Bob Bowley

Tony Sacco

Alice Greeney

Mark Blue

Tony Zaborski

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# **AMIGA**

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23/3-0.0 INDEX - AMIGA SECTION TECHTOPICS ISSUE 23.

23/3-1.1 OPERATIONS NOTES - 1.3 AMIGA WORK BENCH.

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23/3-1.1 OPERATIONS NOTES - 1.3 AMIGA WORK BENCH.

A) USING THE A2088 INSTALL DISK WITH 1.3 WORK BENCH RELEASE WILL CAUSE ERRORS WHEN OPENING SHELL IN CLI.

THE INSTALL/WORK BENCH DISK YOU CREATE USES A DIFFERENT STARTUP SEQUENCE. YOU CAN CORRECT THE PROBLEM BY COPYING THE 1.3 STARTUP SEQUENCE FROM THE ORGINAL 1.3 WORK BENCH TO YOUR NEWLY CREATED INSTALL/WB DISK.

B) UNDER 1.3 , THE FASTFILE SYSTEM OPTION IS NOT VALID IN AN AMIGA HARD DRIVE PARTITION ON THE PC SIDE.

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END 23/3.

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23/5-0.0 INDEX - PC SECTION TECHTOPICS ISSUE 23.

23/5-1.1 PC DRIVE ADD-ON KITS AVAILABLE FROM PARTS.

23/5-1.1 PC DRIVE ADD-ON KITS AVAILABLE FROM PARTS.

THE PARTS DEPARTMENT WILL NOW ACCEPT ORDERS  
FOR THE FOLLOWING DRIVE ADD-ON KITS.

PART NUMBER 910 - 5.25 FLOPPY DISK DRIVE \$109.00

PART NUMBER 920 - 3.5 FLOPPY DISK DRIVE \$109.00

PART NUMBER 992 - 20MB HARD DISK DRIVE \$399.00

PLEASE NOTE: AS STATED ON THE WARRANTY LABOR RATE  
SHEET, #6 - NO LABOR REIMBURSEMENTS WILL BE ISSUED  
FOR INSTALLATION OR EXCHANGE OF NON-FACTORY INSTALLED  
OPTION CARDS. ONLY CBM PARTS ARE COVERED.

NOTE: THIRD PARTY DRIVES, NOT APPROVED BY COMMODORE,  
MAY REQUIRE MODIFICATIONS FOR CORRECT OPERATIONS.

COMMODORE SERVICE WILL NOT PROVIDE TECHNICAL SUPPORT  
FOR ANY OEM PRODUCT NOT APPROVED BY COMMODORE.

END 23/5.

**COMMODORE**  
  
**TELEPHONE DIRECTORY**

<b>FOR</b>	<b>CONTACT</b>	<b>AT</b>
Director, Parts and Service	Anthony Zaborowski	(215) 431-9208
Parts Department Manager • Procurement • Shipping	Scott Kowalski	(215) 431-9315
Parts Orders		1-800-874-4799 in PA (215) 431-9144
Service Center Administrator • Agent Selection • Field Policy and Procedures • Data Base	Alice Feeney	(215) 431-9368
Technical Operations Manager • Heads up the Tech Hotline • Diagnostic Equipment Functions & Instructions • Training Co-ordinator	Bruce Mortenson	1-800-874-4811 in PA (215) 431-9185
Technical Documentation • Service Manuals • Tech Topics • C-TOC	Halsey Beach	(215) 431-9376  1-800-445-4843 (215) 431-9244
Technical Training	John DiMeo Tony Greco	(215) 431-9214 (215) 431-9215
Technical Service Specialist • Amiga Products • CBM Products • PC Products	Brenda Brice Ron Bardsley	1-800-874-4811 in PA (215) 431-9235
Customer Support Manager • Customer, Dealer and Distributor Hotline	Rick Dowdall	(215) 436-4200

COMMODORE  
**AMIGA**  
QUICK REFERENCE SHEET<sup>TM</sup>

**INVOICE PAYMENTS TO:**

Commodore Business Machines  
P.O. Box 7780-1646  
Philadelphia, PA 19182-0322

**PARTS RETURN AND  
LABOR CLAIMS TO:**

Commodore Business Machines  
Parts Depot  
1200 Wilson Drive  
West Chester, PA 19380

**DEFECTIVE PARTS:  
(D.O.A.)**

Same as Above (Parts Depot Address)  
Part must be clearly identified as D.O.A.  
on NARDA form

**BUSINESS EQUIPMENT  
REPAIR:**

Call (215) 431-9235 for instructions  
and repair prices

**MISSHIPMENTS AND  
ORDER INQUIRIES:**

Call Parts Hotline for instructions  
1-800-874-4799

**NOTE**

**HOTLINES ARE FOR SERVICE CENTERS ONLY NOT CONSUMERS**

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22/3-0.0 INDEX - AMIGA SECTION TECHTOPICS ISSUE 22.  
22/3-1.1 FAT AGNUS SOCKET SPECIFICATIONS.  
22/3-2.1 FLAT PACK IC CHIP EXTRACTOR.  
22/3-3.1 A1020 OPERATIONS ADDENDUM.  
22/3-4.1 A2090A TECH DATA MANUAL RELEASE.  
22/3-4.2 ENCLOSURE: E22/3-4.2 - A2090A PN# 314880-01  
22/3-5.1 A2058 TECH DATA MANUAL RELEASE.  
22/3-5.2 ENCLOSURE: E22/3-5.2 - A2058 PN# 314881-01

---

22/3-1.1 FAT AGNUS SOCKET SPECIFICATIONS

SERVICE PARTS DEPARTMENT WILL BE STOCKING THE 84 PIN PLCC SOCKET USED FOR FAT AGNUS AND FE2010A. COMMODORE PART NUMBER - 390185-01, DEALER BILLING IS \$6.50.

DESCRIPTION - THIS SPECIFICATION DESCRIBES THE REQUIREMENTS FOR PLASTIC LEADED CHIP CARRIERS. ACCOMMODATES PACKAGES CONFORMING TO EIA/JEDEC STANDARDS - TYPE C. CARRIER INCORPORATES CLOSED BOTTOM, PREVENTING SOLDER BRIDGING OR WICKING AND HAS OPEN CENTER AND CORNER STAND-OFF FOR EASY REMOVAL OF ANY FLUX RESIDUE AFTER ASSEMBLY OPERATION. ADAPTS .050 INCH CHIP CARRIER TO .100 BOARD HOLE SPACING.

PHYSICAL MATERIAL -

BODY: GLASS RE-INFORCED THERMOPLASTIC

CONTACT: BERYLLIUM COPPER

FINISH: TIN ALLOY, POST PLATED.

FLAMMABILITY: UL94V-0

INSERTION FORCE: 12 OZ. PER CONTACT.

WITHDRAWAL FORCE: 0.5 OZ. PER CONTACT.

INSERTION: POLARIZED AND PIN 1 LOCATION IS MARKED.

SOLDERABILITY: WAVE SOLDER (SOLDER TAIL)  
VAPOR REFLOW (SURFACE MOUNT)

ELECTRICAL -

CONTACT RATING: 1 AMP/CONTACT

INSULATION RESISTANCE: 5000 MEGOHMS - MINIMUM

DIELECTRIC VOLTAGE: 1000 VAC RMS

CAPACITANCE: 1.0 PF - MAXIMUM

CONTACT RESISTANCE: 20 MILLI OHMS/CONTACT

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22/3-1.1      FAT AGNUS SOCKET SPECIFICATIONS.      (CONTINUED)

ENVIRONMENTAL -

TEMPERATURE RANGE: -40 DEGREES C TO 85 DEGREES C  
SHOCK: 100G, PER MIL-STD-202 METHOD 21  
VIBRATION: 15G, 10-2000 HZ MIL-STD-1344A  
HUMIDITY: CONFORMS TO EIA SPECS.

**WARNING - DO NOT USE SUB-STANDARD REPLACEMENT PARTS,  
TIN OR UNLEADED SOCKETS MAY LED TO  
INTERMITTENT PROBLEMS. NO CREDIT WILL BE  
ISSUED FOR PCB'S RETURNED WITH NON-APPROVED  
VENDORS SOCKETS.**

APPROVED VENDORS - BURNDY QILE-84 P-410T  
MIDLAND ROSS 709-2000-084-4-1-1

22/3-2.1 FLAT PACK IC EXTRACTOR.

A BURNDY CHIP EXTRACTOR, QILEXT-1 IS REQUIRED FOR REMOVAL OF NEW 84 PIN PLCC (PLASTIC LEADED CHIP CARRIER), SUCH AS FAT AGNUS (AMIGA) AND FE2010A (PC10-III, PC20-III, COLT).

THIS EXTRACTOR MAY BE PURCHASED FROM LECTRONIX (314) 946-6424 (ASK FOR SHARON). LECTRONIX SELLS THIS TOOL FOR \$15.00 WITH NO MINIMUM ORDER.

COMMODORE SERVICE WILL MAKE THIS TOOL AVAILABLE IN THE NEAR FUTURE.

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22/3-3.1 A1020 OPERATIONS ADDENDUM.

ISSUE 21 - AMIGA SECTION 21/3-1.2, .3 NOTE:  
A1020 - AMIGADOS WILL FORMAT DISKETTE FOR 440K.

A1020 - MSDOS, YOU MUST BE IN TRANSFORMER BEFORE  
YOU POWER ON THE DRIVE. THIS MEANS THE GREEN AND  
BLACK SCREEN, NOT THE ICON OF TRANSFORMER IN CLI  
WINDOW.

ALL VERSIONS OF A1020, INCLUDING 1.2 AND 1.3 PCBs,  
WORK IF YOU FOLLOW THE INSTRUCTIONS FOR UPDATING  
THE PCB AS DETAILED IN ISSUE 20/3-3.1.  
REFER TO 21/3-1.2 AND 21/3-1.3 FOR OPERATING  
INSTRUCTIONS.

22/3-4.1 A2090A TECH DATA MANUAL RELEASE.

A2090A HARD DISK CONTROLLER CARD TECHNICAL DATA IS  
INCLUDED WITH MAILING OF TECHTOPICS, ISSUE 22.

THIS CARD IS USED WITH THE 1.3 ROM UPDATE TO PROVIDE  
AUTO-BOOT FROM HARD DRIVE FEATURES ON THE A2000.

22/3-4.2 ENCLOSURE: E22/3-4.2 - A2090A TECH DATA PN# 314880-01.

ENCLOSED IN TECHTOPICS, ISSUE 22. MAILED TO ALL  
AMIGA AUTHORIZED SERVICE CENTERS.

22/3-5.1 A2058 TECH DATA MANUAL RELEASE.

A2058 RAM EXPANDER TECHNICAL DATA IS INCLUDED  
WITH MAILING OF TECHTOPICS ISSUE 22.

22/3-5.2 ENCLOSURE: E22/3-5.1 - A2058 TECH DATA PN# 314881-01.

ENCLOSED IN TECHTOPICS, ISSUE 22. MAILED TO ALL  
AMIGA AUTHORIZED SERVICE CENTERS.

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END ISSUE 22, AMIGA 10/88

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22/5-1.1 PC10-III, PC20-III, COLT MEMORY MAP.  
22/5-2.1 PC10-III, PC20-III, COLT CBM 8088 MONITOR.  
22/5-3.1 PC10, COLT BIOS 4.36 RELEASE NOTES.

22/5-1.1 PC10-III, PC20-III, COLT MEMORY MAP.

MEMORY ADDRESS (HEX)	CONTENTS
----------------------	----------

00 00 00	
03 FF FF	640K BASE RAM
04 00 00	
09 FF FF	

0A 00 00	EGA/VGA VIDEO RAM
0A FF FF	

0B 00 00	MONOCHROME VIDEO
0B 3F FF	

0B 40 00	RESERVED
0B 7F FF	

0B 80 00	COLOR VIDEO
0B FF FF	

0C 00 00	RESERVED FOR EGA BIOS
0C 7F FF	

0C 80 00	AVAILABLE
0C 9F FF	

0C A0 00	RESERVED
0F 7F FF	

0F 80 00	CBM 8088 MONITOR
0F 9F FF	

0F A0 00	HARD DRIVE BIOS
0F BF FF	

0F C0 00	16K MAIN BIOS
0F FF FF	

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22/5-2.1 PC10-III, PC20-III, COLT CBM 8088 MONITOR.

THE PC10-III, PC20-III AND COLT HAVE A BUILT IN MONITOR, IN ADDITION TO THE DEBUG MONITOR IN THE OPERATING SYSTEM.

THE COMMODORE 8088 MONITOR MAY BE ENTERED WHEN A ERROR CONDITION IS DETECTED ON POWER UP TESTS BY PRESSING THE CONTROL KEY IN COMBINATION WITH THE 'M' KEY (CNTRL M).

YOU MAY EXAMINE THE MONITOR BY LEAVING THE BOOT DISK OUT OF SYSTEM AT POWER UP, A SYSTEM MESSAGE WILL APPEAR ON CONSOLE:

BOOT DISK FAILURE. TYPE KEY TO RETRY.

PRESS CONTROL 'M' TO ENTER CBM MONITOR.  
SYSTEM WILL RESPOND WITH:

COMMODORE 8088 MONITOR  
PRE-RELEASE VERSION 2.0  
COPYRIGHT 1987 COMMODORE TECHNOLOGY GROUP

USE ? FOR HELP

RESPONDING WITH A QUESTION MARK, RETURN, WILL GENERATE THE FOLLOWING MONITOR OPTIONS:

```
Dump [starting addr]
Fill [starting addr] [count] [data]
Goto [addr] break point1] [break point2]
Input port [byte : word] [port addr]
Output port [byte : word] [port addr] [data]
iNterrupt [#hex]
Move [source addr] [dest addr] [count]
Substitute memory [addr]
Trace
eXamine [register]
Boot
```

THE SYSTEM REGISTER ADDRESSES WILL BE PRINTED IN THE NEW COLT SERVICE MANUAL DUE FOR RELEASE IN OCTOBER.

REGISTER ADDRESSES CONFORM TO PC INDUSTRY STANDARDS FOR COMPATIBILITY.

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22/5-3.1 PC10, COLT BIOS 4.36 RELEASE NOTES.

A NEW BIOS ROM FOR THE PC10-III, PC20-III AND COLT IS BEING RELEASED. NEW PART NUMBER IS 318085-02. THIS IS AN IN-LINE UPGRADE AND MUST BE PURCHASED BY THE END USER DIRECTLY THROUGH AN AUTHORIZED SERVICE CENTER. INSTALLATION OF THIS IC MUST BE DONE BY AN COMMODORE AUTHORIZED TECHNIAN.

THE FOLLOWING SUMMARY DETAILS CHANGES IN BIOS 4.36.

- 1) 9600 BAUD PROBLEM  
TERMINAL AND COMMUNICATIONS SOFTWARE PACKAGES WHICH USED INTERRUPT-DRIVEN COM:, DROPPED CHARACTERS.  
FIX: CODE INTENDED TO SIMULATE THE KEYCLICK CORRECTED
- 2) EQUIPMENT CHECK  
BIOS INT 11H RETURNS 40 COLUMN STATUS WHEN IN 80 COLUMN MODE AND 80 COLUMN STATUS WHEN IN 40 COLUMN MODE WHEN RUNNING IN CGA MODE.  
FIX: BIOS MODIFIED TO RETURN CORRECT COLOR MODE NUMBER.
- 3) F11 AND F12 KEYS  
BIOS INT 16H RETURNS INCORRECT SCAN CODES FOR FUNCTION KEYS F11 AND F12.  
FIX: KEYBOARD TABLE WAS CORRECTED.
- 4) NEW MICROSOFT BUS MOUSE  
BIOS AUTOCONFIG(TM) DID NOT RECOGNIZE NEWEST MICROSOFT BUS MOUSE. RESULT INCORRECT OPERATION OF ENTIRE SYSTEM.  
FIX: BIOS NOW TESTS FOR EITHER TYPE OF MOUSE BEFORE ENABLING ONBOARD MOUSE.
- 5) EGA BOARD PROBLEMS  
SEVERAL EGA CARDS EXHIBITED MEMORY CONFLICTS WITH PVC4 CONTROLLER.  
FIX: PVC4 VIDEO CONTROLLER WILL BE DISABLED IF A SPECIAL VIDEO ADAPTER BIOS MODULE( EGA, VGA, ETC.) IS FOUND.
- 6) IBM 3270 CARD  
IBM 3270 CARDS DID NOT FUNCTION.  
FIX: PATCH CODE IN INT 1A.

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22/5-3.1 PC10, COLT BIOS 4.36 RELEASE NOTES. (CONTINUED)

- 7) HD BOOT SPEED  
HARD DRIVE TAKES TO LONG TO BOOT.  
FIX: LATEST BIOS IMPROVES LOAD TIME.
- 8) IBM 5250 CARD  
UPLOAD, DOWNLOAD PROBLEMS WITH 5250 EMULATOR TO IBM  
SYSTEM 38  
FIX: PATCH CODE IN INT 1A.
- 9) OKI REAL-TIME CLOCK CHIP PROBLEMS  
RTC REGISTER ALTERED BY UNAUTHORIZED SYSTEM CODE.  
FIX: RTC INITIALIZATION CODE MODIFIED.
- 10) COLD BOOT FROM S/W  
PROGRAMS WHICH ISSUE A CALL TO THE BIOS COLD BOOT  
LOCATION (FOO:E05B) OR THE HARDWARE RESET VECTOR  
(FFFF:0000) WILL HANG (EXAMPLE - MSDOS FDISK).  
FIX: COLD AND WARM BOOT CODE MODIFIED.
- 11) SYSTEM CRASH  
UNEXPECTED INTERRUPT CAUSES SYSTEM TO CRASH OR HANG UP  
AFTER PROLONGED USE.  
FIX: MODIFIED UNEXPECTED INTERRUPT CODE.
- 12) ENHANCEMENT OF ONBOARD BASE MEMORY CONFIGURATION  
IF OFFBOARD MEMORY IS FOUND FROM OK TO 640K THE  
CORRESPONDING ONBOARD MEMORY BANK IS DISABLED.  
IF NO OFFBOARD MEMORY IS FOUND, THEN ONBOARD MEMORY  
IS CONFIGURED TO 640K.

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END ISSUE 22, PC 10/88

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- 21/3-0.0 INDEX - AMIGA SECTION TECHTOPICS.
- 21/3-1.1 ERRATUS 20/3-3.2 A1020 DISK DRIVE FIX.
- 21/3-1.2 A1020 OPERATIONS USING AMIGADOS.
- 21/3-1.3 A1020 OPERATIONS USING MSDOS (TRANS V1.2).
- 21/3-2.1 A2300 GENLOCK TECHNICAL SPECIFICATIONS.
- 21/3-2.2 ENCLOSURE: E21/3-2.2 - A2300 TECH SPECS.

---

21/3-1.1 ERRATUS 20/3-3.1 A1020 DISK DRIVE FIX.

REFER TO ISSUE 20 MARCH 88, SECTION 3,  
ITEM 3.2 A1020 DISK DRIVE SCHEMATIC # 328171  
LABELS ON CONNECTOR J5 ARE REVERSED. PIN 1 SHOULD BE  
LABLED GROUND AND PIN 2 SHOULD BE LABLED 5 VOLTS.  
THIS CORRECTION DOES NOT AFFECT THE FIX.

21/3-1.2 A1020 OPERATIONS USING AMIGADOS.

A1020 FLOPPY DISK DRIVE MUST BE UPGRADED AS PER  
TECHTOPICS BULLETIN 20/3-3.1.

- 1) POWER ON A1020, POWER ON A500 CPU.
- 2) LOAD CLI.
- 3) EXAMINE 'MOUNTLIST' FILE IN 'DEV' DIRECTORY.
- A) 'ED DEVS/MOUNTLIST' (CR RETURN).
  - IF A1020 IS DF1:, UNIT MUST EQUAL 1.
  - IF A1020 IS DF2:, UNIT MUST EQUAL 2.
- B) MAKE NECESSARY EDITS TO MOUNTLIST.
  - 'ESC X' (CR RETURN) RESAVES MOUNTLIST FILE  
WITH EDITS.
  - 'ESC Q' (CR RETURN) QUILTS ED, LEAVING FILE  
UNEDITED.
- 4) IN CLI, ISSUE 'MOUNT DF1:' (CR RETURN) COMMAND.  
OR 'MOUNT DF2:' (CR RETURN).
- 5) IN CLI, ISSUE 'DISKCHANGE DF1:' COMMAND.  
NOTE - THERE IS NO DISKCHANGE HARDWARE CONTROL  
STATUS SIGNAL FROM THE A1020, YOU MUST ISSUE  
'DISKCHANGE' COMMAND EACH TIME YOU CHANGE VOLUMES.

A1020 WILL NOW RESPOND AS DF1:, (OR DF2:).

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21/3-1.3 A1020 OPERATIONS USING MSDOS (TRANSFORMER V1.2).

A1020 FLOPPY DRIVE MUST BE UPGRADED AS PER  
TECHTOPICS BULLETIN 20/3-3.1.

- 1) POWER ON A500 CPU. DO NOT POWER ON A1020  
AT THIS TIME!
- 2) RUN 'NO FAST MEM' PROGRAM IN SYSTEM DRAW IF YOU  
HAVE AN A501 MEMORY EXPANDER. MEMORY WILL DECREASE  
TO 444840 BYTES FREE.
- 3) INSERT AMIGA TRANSFORMER V1.2 SOFTWARE. NOTE -  
YOU MUST USE VERSION 1.2.
- 4) CHECK 'SETATPREF'. SET A1020 TO REQUIRED  
HARDWARE CONFIGURATION.
- 5) LOAD AMIGA TRANSFORMER V1.2. WHEN TRANSFORMER SCREEN  
IS DISPLAYED, POWER ON A1020. IF MSDOS DISKETTE IS  
IN DRIVE, SYSTEM INITIALIZATION WILL PROCEED.

A1020 WILL NOW RESPOND AS A: (OR B:).

21/3-2.1 A2300 GENLOCK TECHNICAL SPECIFICATIONS.

ENCLOSED WITH TECHTOPICS ISSUE 21, PLEASE FIND  
A2300 GENLOCK TECHNICAL SPECIFICATIONS, PN# 314871-01.

OPERATING INSTRUCTIONS CAN BE FOUND IN A2300 GENLOCK  
USER'S GUIDE PN# 319975-01. THIS IS AVAILABLE THROUGH  
THE PARTS DEPARTMENT ALONG WITH A GENLOCK DEMO DISKETTE  
PN# 317718-01.

21/3-2.2 ENCLOSURE E21/3-2.2 - A2300 TECHNICAL SPECIFICATIONS.

PART NUMBER 314871-01 MAILED TO AMIGA AUTHORIZED  
SERVICE CENTERS WITH TECHTOPICS ISSUE 21, JULY 1988.

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21/5-0.0 INDEX - PC SECTION TECHTOPICS ISSUE 21.

21/5-1.1 PC10/COLT DIAG PROG V2.0 DISKETTE.

21/5-2.1 PC10-III POWER SUPPLY SCHEMATIC.

21/5-2.2 ENCLOSURE: E21/5-2.2 - PC10-III POWER SUPPLY SCHEMATIC.

21/5-3.1 PC10-III KEYBOARD SCHEMATIC.

21/5-3.2 ENCLOSURE: E21/5-3.2 - PC10-III KEYBOARD SCHEMATIC.

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21/5-1.1 PC10/COLT DIAGNOSTIC PROGRAM DISKETTE V2.0.

NOTICE OF THIS NEW DIAGNOSTIC RELEASE WAS MAILED WITH  
NEW PARTS PRICE BOOK JUNE 88.

A NEW VERSION OF THE PC10 DIAGNOSTICS SYSTEM DISKETTE  
HAS NOW BEEN RELEASED. IF YOU HAVE RECEIVED THE PC10 CPU  
DIAGNOSTIC KIT YOU MAY WISH TO TAKE ADVANTAGE OF THIS  
UPGRADE OFFER.

THE UPGRADE PC10 DIAGNOSTICS SYSTEM DISK, PN 314984-03,  
IS DESIGNED TO OPERATE ON ALL COMMODORE PCS, (PC10-1,  
PC10-2, PC10-III, PC20-III, PC COLT) AS WELL AS THE PC  
MODE OF THE AMIGA A2000.

COST OF THIS UPGRADE DISKETTE IS \$20.00. YOU MUST RETURN  
OLD SYSTEM DISKETTE, WITH CHECK FOR \$20.00, TO BRUCE  
MORTENSON IN SERVICE.

\*\*\* NOTE: THIS UPGRADE PROGRAM WILL BE IN EFFECT UNTIL  
JULY 1, 1988. AFTER THIS DATE NO DISKETTES WILL BE  
ACCEPTED FOR EXCHANGE AND UPGRADES MUST BE PURCHASED  
AT STANDARD DEALER COST.

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ISSUE 21 - JUNE 88

SECTION 5

PC - PAGE 2

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21/5-2.1 PC10-III POWER SUPPLY SCHEMATIC.

OEM SCHEMATIC FOR PC10-III POWER SUPPLY ASSY #312637-02  
IS FOR REFERENCE ONLY. NO WARRANTY COMPONENT REPAIRS  
ARE AUTHORIZED FOR THIS ASSEMBLY.

21/5-2.2 ENCLOSURE: E21/5-2.2 PC10-III POWER SUPPLY SCHEMATIC.

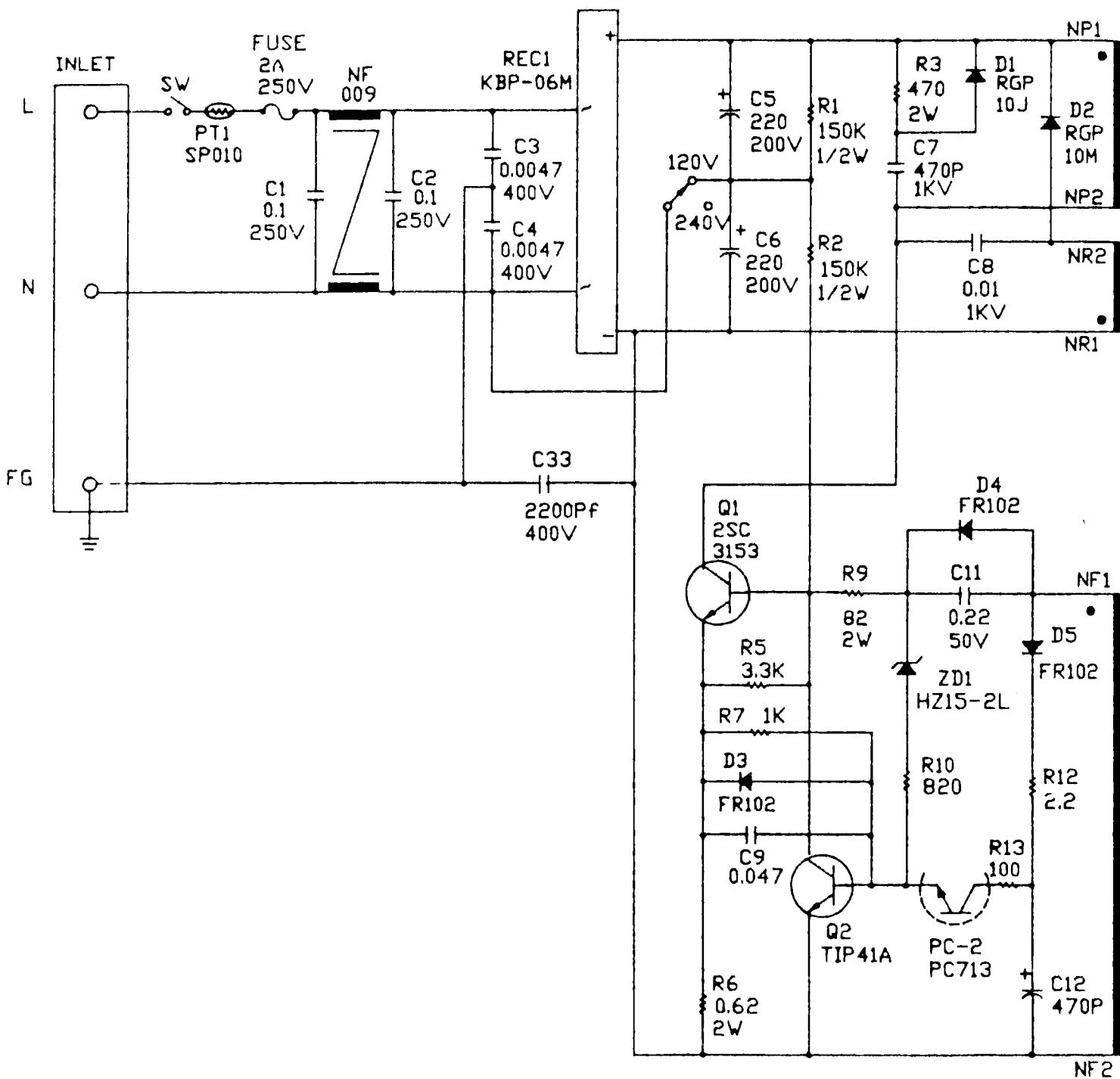
ENCLOSED IN PC SECTION OF TECHTOPICS 21, MAILED JULY 88.  
PLEASE ADD THIS DIAGRAM AS PAGE 32 OF PC10-1, PC10-2,  
PC10-III, SERVICE MANUAL #314860-01.

21/5-3.1 PC10-III KEYBOARD SCHEMATIC.

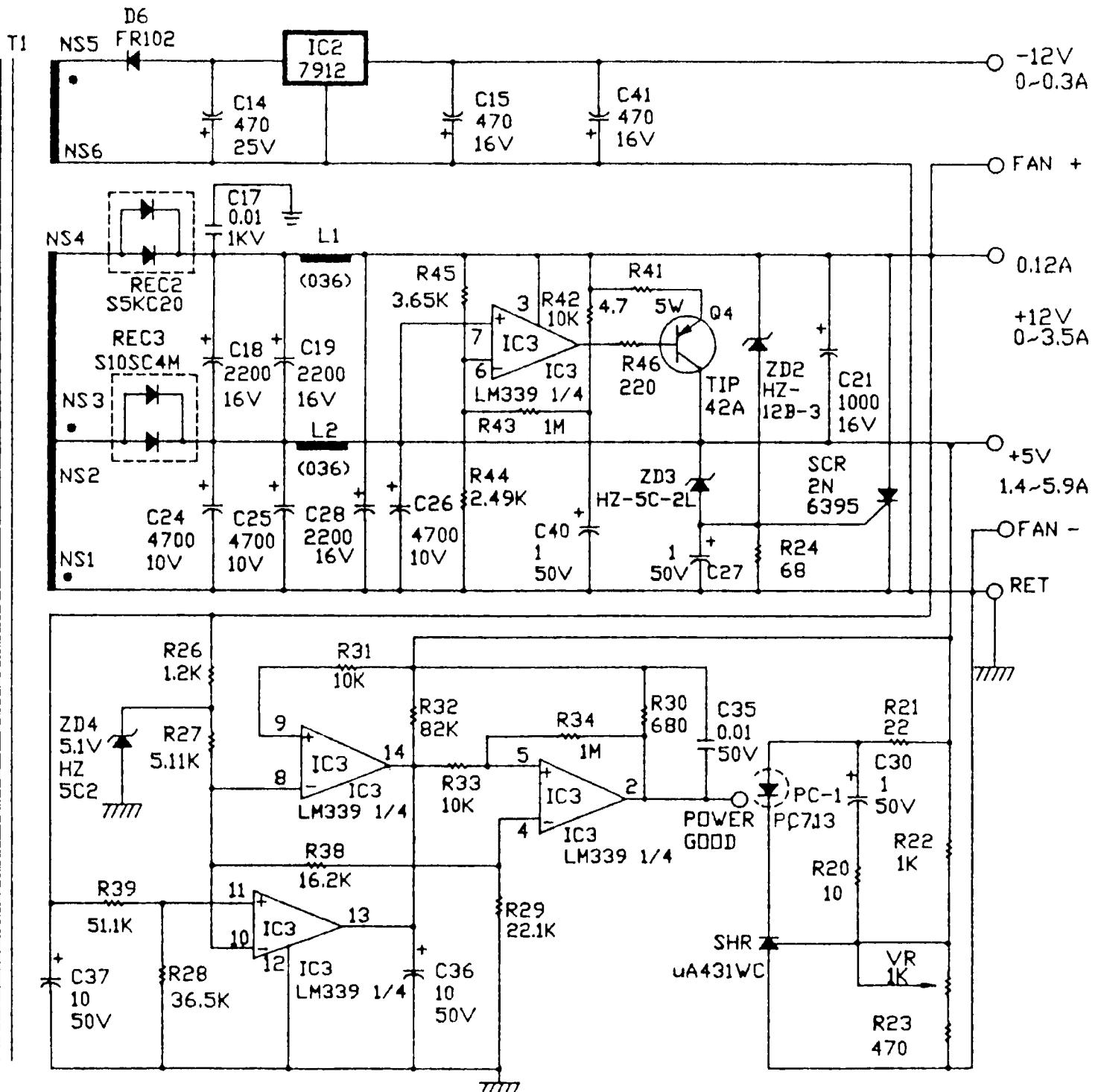
OEM SCHEMATIC FOR PC10-III KEYBOARD ASSEMBLY # 312702-02  
IS FOR REFERENCE ONLY. NO WARRANTY COMPONENT REPAIRS  
ARE AUTHORIZED FOR THIS ASSEMBLY.

21/5-3.2 ENCLOSURE: E21/5-3.2 PC10-III KEYBOARD SCHEMATIC.

ENCLOSED IN PC SECTION OF TECHTOPICS 21, MAILED JULY 88.  
PLEASE ADD THIS DIAGRAM AS PAGE 33 OF PC10-1, PC10-2,  
PC10-III, SERVICE MANUAL #314860-01.

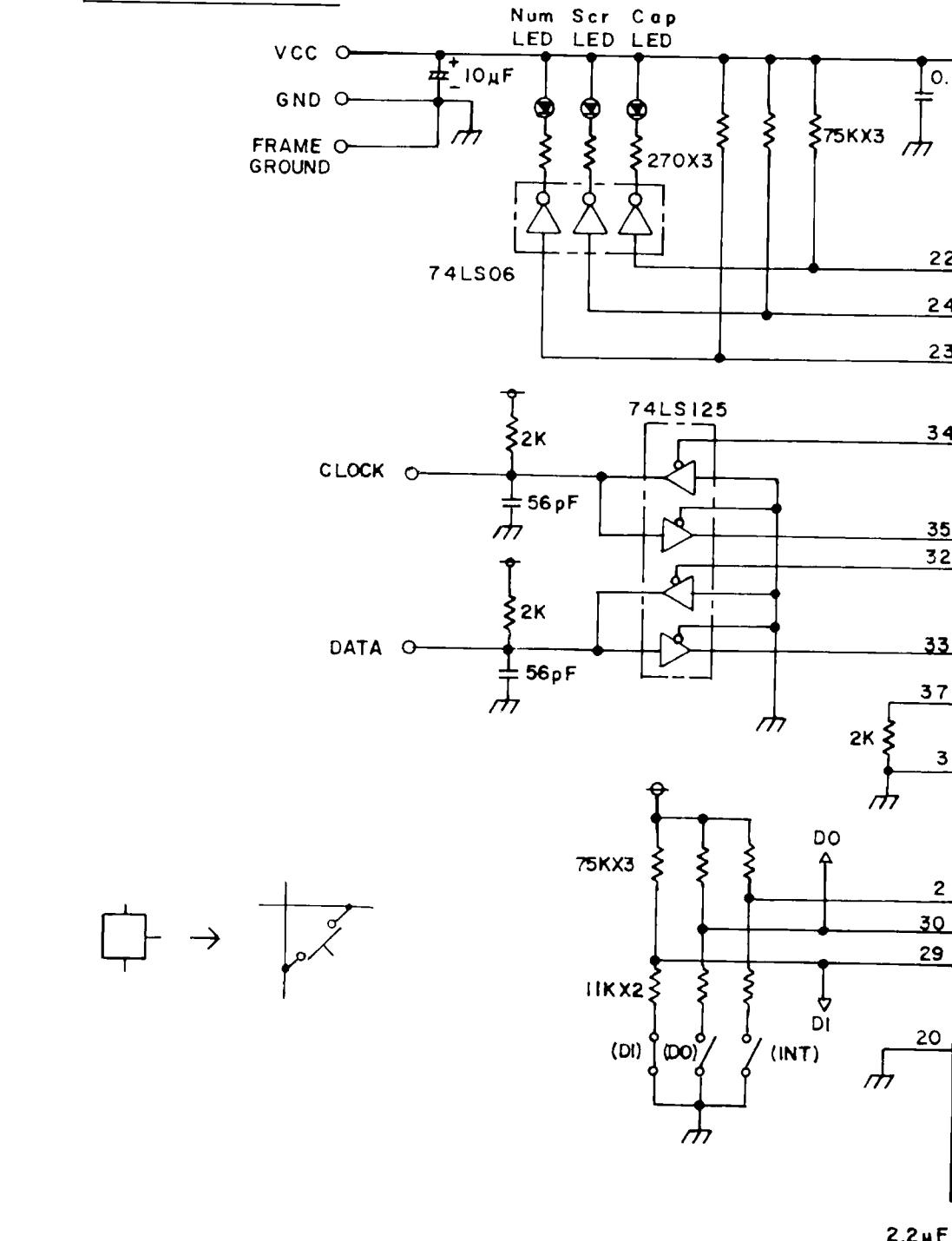


**PC10-III POWER SUPPLY**  
*Assembly #312637-02*



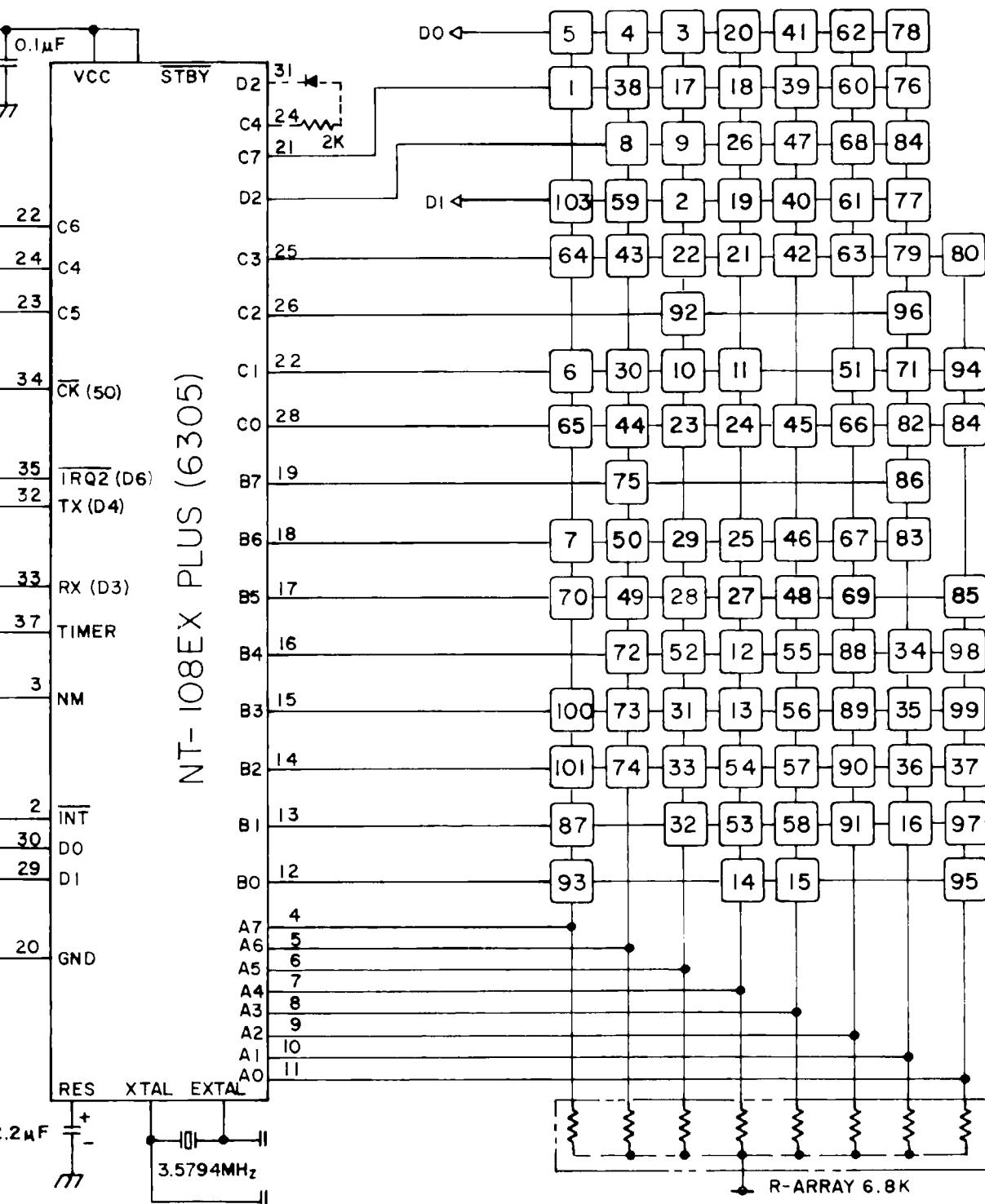
**OEM SCHEMATIC  
FOR REFERENCE ONLY**

### CIRCUIT DIAGRAM



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----

17	18	19	20	21	22	23	24	25	26	27	28	29	30
38	39	40	41	42	43	44	45	46	47	48	49	50	71
59	60	61	62	63	64	65	66	67	68	69	70	51	
75	103	76	77	78	79	80	81	82	83	84	85	86	
92		93			94			95		96			91
													100
													101



OEM SCHEMATIC  
FOR REFERENCE ONLY

## 3

## AMIGA

3-0.0 INDEX - AMIGA SECTION TECHTOPICS ISSUE 20 MARCH 88.

3-1.1 A2000 SYSTEM CLOCK FIX.

3-1.2 ATTACHMENT - A2000 POWER SUPPLY REFERENCE SCHEMATIC.

3-1.3 ATTACHMENT - A2000 POWER SUPPLY BOARD LAYOUT.

3-2.1 FLAT PACK CHIP EXTRACTOR.

3-3.1 A1020 DISK DRIVE FIX FOR A500 OPERATIONS.

3-3.2 ATTACHMENT - A1020 DISK DRIVE SCHEMATIC # 328171.

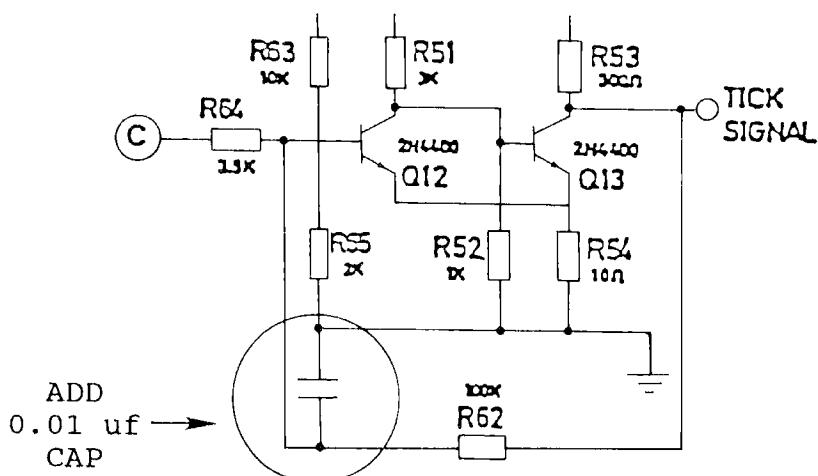
3-1.1 A2000 SYSTEM CLOCK FIX.

THE A2000 SYSTEM CLOCK CAN RUN FAST FOR TWO REASONS.

- 1) JUMPER J300 IN WRONG POSITION.
- 2) NOISE ON TICK SIGNAL FROM ELTEK TYPE POWER SUPPLY.

A WARRANTY LABOR RATE OF \$20.00 WILL BE CREDITED FOR THE FOLLOWING FIX ON THE ELTEK TYPE POWER SUPPLY TO CORRECT NOISE ON TICK SIGNAL. NOTE, A WHITE '00' STICKER IS ON POWER SUPPLIES WHICH HAVE THE MODIFICATION INSTALLED.

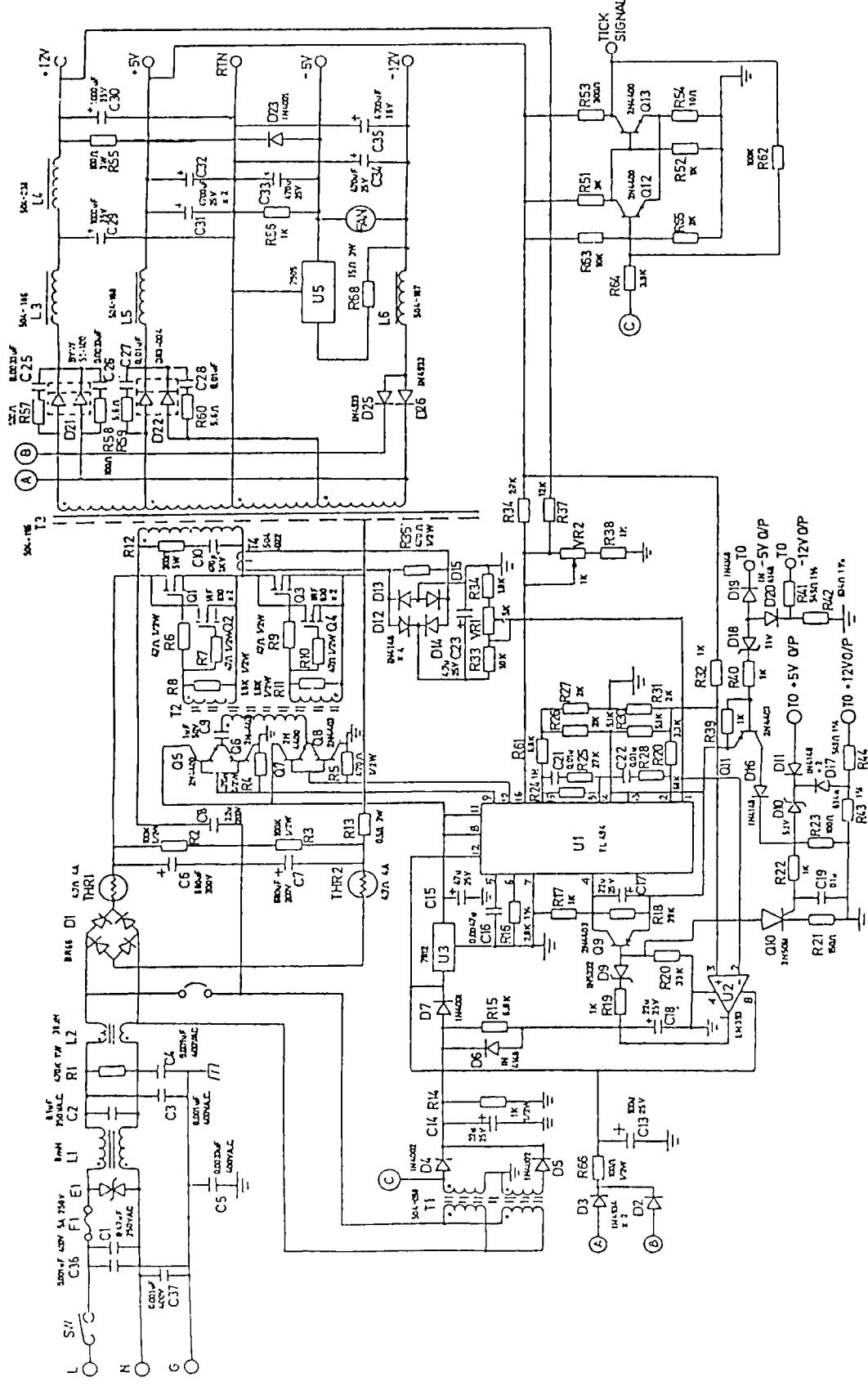
REFER TO ATTACHEMENT, ELTEK POWER SUPPLY SCHEMATIC. CHECK PIN 14 (TICK SIGNAL) OF CN400 WITH SCOPE FOR NOISE. ADD, ON POWER SUPPLY, 0.01 UF CAPACITOR BETWEEN R65 (GND SIDE), AND R62, AS INDICATED IN DETAIL DIAGRAM BELOW.



A2000 SYSTEM CLOCK FIX DIAGRAM

3-1.2 ATTACHMENT - A2000 POWER SUPPLY REFERENCE SCHEMATIC.

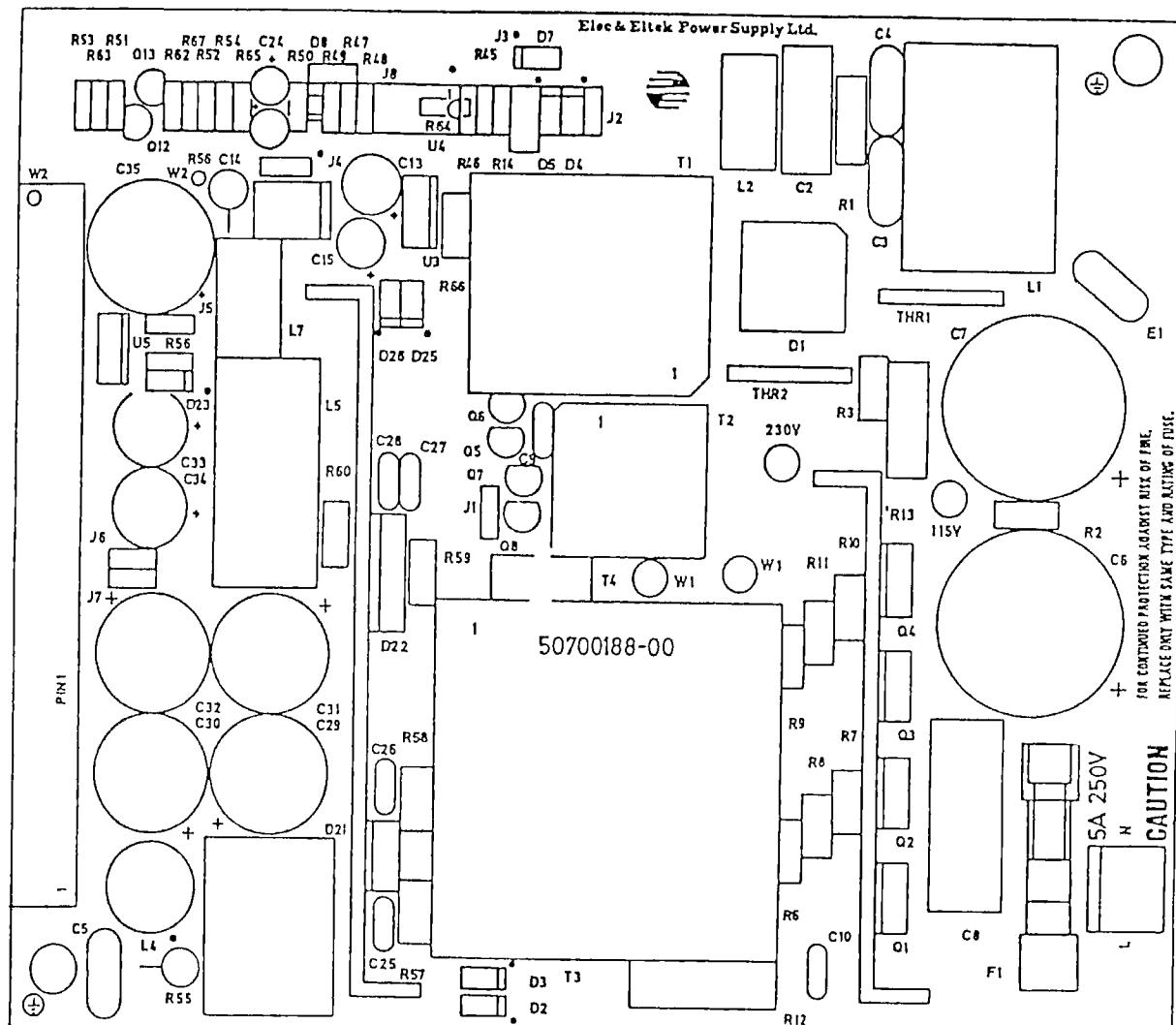
**3 AMIGA**



ELTEK TYPE - A2000 POWER SUPPLY SCHEMATIC.

FOR REFERENCE ONLY

**3-1.3 ATTACHMENT - A2000 POWER SUPPLY BOARD LAYOUT.**



**ELTEK TYPE - A2000 POWER SUPPLY BOARD LAYOUT.**

FOR REFERENCE ONLY

ATTACHMENT 20/3-1.3

**3-2.1 FLAT PACK IC CHIP EXTRACTOR**

A BURNDY CHIP EXTRACTOR #QILEXT-1 IS REQUIRED FOR REMOVAL OF NEW 84 PIN PLCC, SUCH AS F.AGNUS (AMIGA) AND FE2010A (PC10-III).

BURNDY REGIONAL OFFICE TELEPHONE NUMBERS ARE AS FOLLOWS. YOU MAY OBTAIN NAME OF NEAREST BURNDY REP BY CALLING THESE NUMBERS:

BURNDY HQ., CT.	(203) 838-4444
BURNDY, TEXAS.	(214) 840-8945
BURNDY, CAILF.	(408) 837-0470

THE FOLLOWING BURNDY REPS STOCK QILEXT-1. COST IS ABOUT \$12.00.

EAST COAST - PYTRONICS	(215) 643-2850
MIDWEST - LECTRONIX	(314) 946-6424
WEST COAST - CETEC	(408) 434-1114 EXT 3113

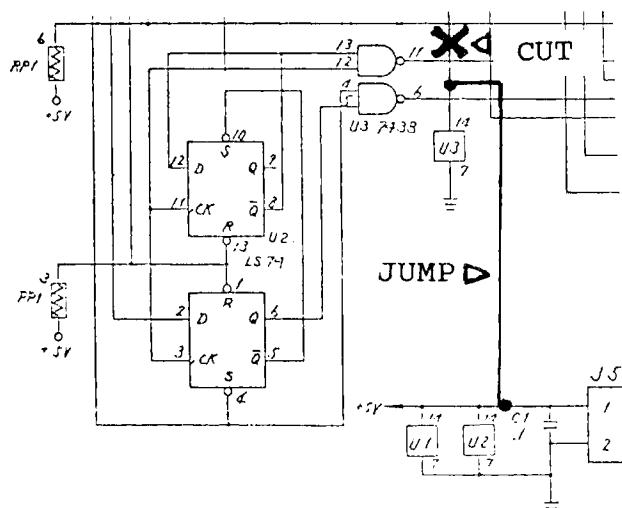
COMMODORE SERVICE WILL MAKE THIS TOOL AVAILABLE IN THE NEAR FUTURE. AN ANNOUNCEMENT WILL BE MADE WHEN EXTRACTOR IS AVAILABLE THROUGH COMMODORE.

## 3-3.1 A1020 DISK DRIVE FIX FOR A500 OPERATIONS

THE FOLLOWING MODIFICATION TO THE A1020 IS REQUIRED FOR OPERATIONS WITH THE A500. A WARRANTY LABOR RATE OF \$20.00 WILL BE CREDITED FOR THIS FIX ON DRIVES WITHIN THE COMMODORE'S NORMAL 90 DAY WARRANTY. UNITS OUTSIDE OF WARRANTY PERIOD WILL NOT RECEIVE CREDIT.

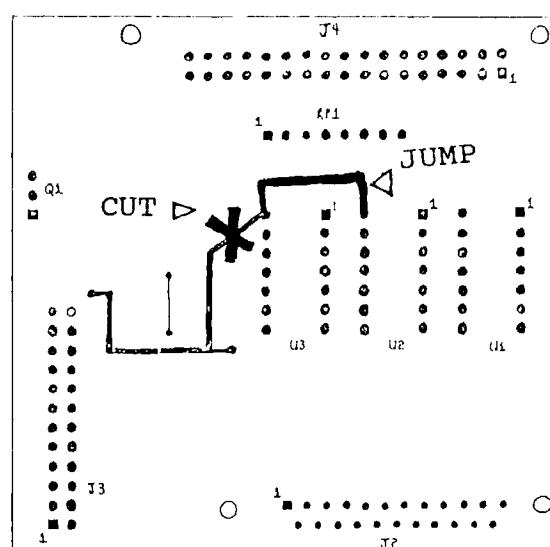
REFER TO ATTACHED A1020 DRIVE SCHEMATIC #328171.  
 CUT +5V TRACE FROM J3 TO PIN 14 OF U3. JUMPER U3 PIN 14 TO U2 PIN 14 (SEE DETAIL DIAGRAMS BELOW).  
 NOTE: REVISION IS TO BE MADE ON NON-COMPONENT SIDE OF PCB (SEE DIAGRAM B, BELOW).

DIAGRAM - A



SCHEMATIC DETAIL

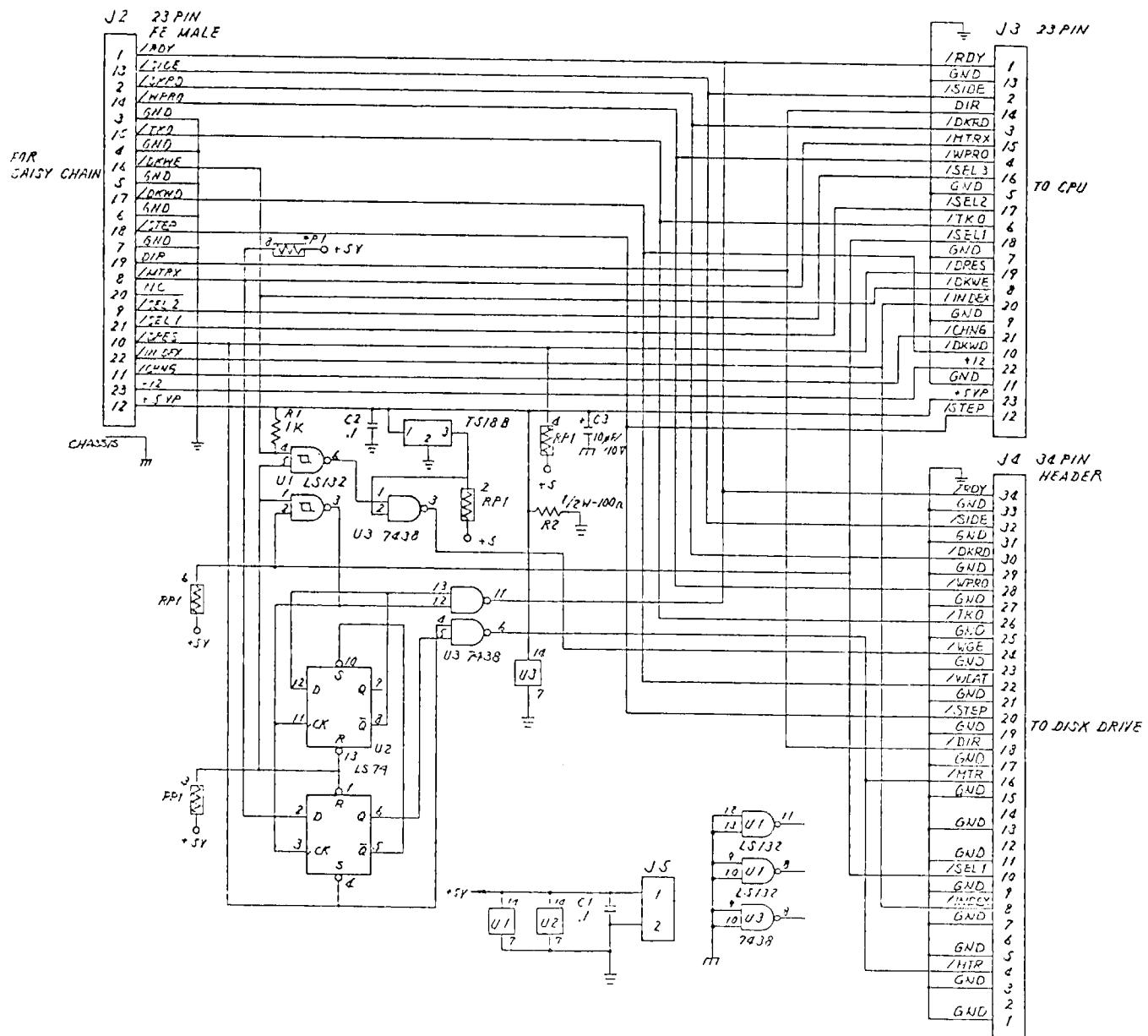
DIAGRAM - B



NON-COMPONENT SIDE

3 AMIGA

**3-3.2 ATTACHMENT - A1020 DISK DRIVE SCHEMATIC # 328171.**



**5**

**PC**

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5-0.0 INDEX - PC SECTION TECHTOPICS ISSUE 20, MARCH 88.

5-1.1 PC10-III SERVICE MANUAL ADDENDUM # 314859-01

5-1.2 ENCLOSURE: 20/5-1.2 - PC10-III ADDENDUM.

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5-1.1 PC10-III SERVICE MANUAL ADDENDUM # 314859-01.

NEW RELEASE OF PC10-III SERVICE SCHEMATICS  
AND PARTS LIST.

5-1.2 ENCLOSURE: 20/5-1.2 - PC10-III ADDENDUM.

ENCLOSED WITH TECHTOPICS ISSUE 20, MAILED MARCH 1988.  
INSERT THIS ADDENDUM INTO YOUR PC SERVICE MANUAL.

## **PC10 TECHTOPICS**

### ***II — COMMODORE PC TECHTOPICS***

#### **PC10 ENCLOSURES INCLUDED IN THIS ISSUE**

- 1) Enclosed please find first release of the New 1901 Mono Chrome Monitor Service Manual, part number 314970-01.
- 2) Enclosed please find PC10 Hard Drive Mounting Diagram. This kit is available through the Parts Department. Part number is 380042-01, cost is \$10.00.
- 3) PC10 Hard Drive Mounting Instructions — Please see sheet 2 of this section.
- 4) PC10 Diagnostic Information

PC10 CPU Diagnostic Kit, part number 314984-01, is now in stock. This kit contains 3 diskettes, connectors for the parallel and serial ports, and written instructions. The cost of this kit is \$125.00.

PC10 Drive Alignment Kit, part number 314853-01, will be available soon. This kit will contain a digital program diskette and a analog alignment diskette. The cost will be \$125.00.

- 5) Drive Select and Bus Termination on PC Drives

See enclosed diagram of PC Drive Chinon F-502 type 5½ floppy PCB. Locate Jumpers (enclosed in circle) J1.

Strapping is as follows:

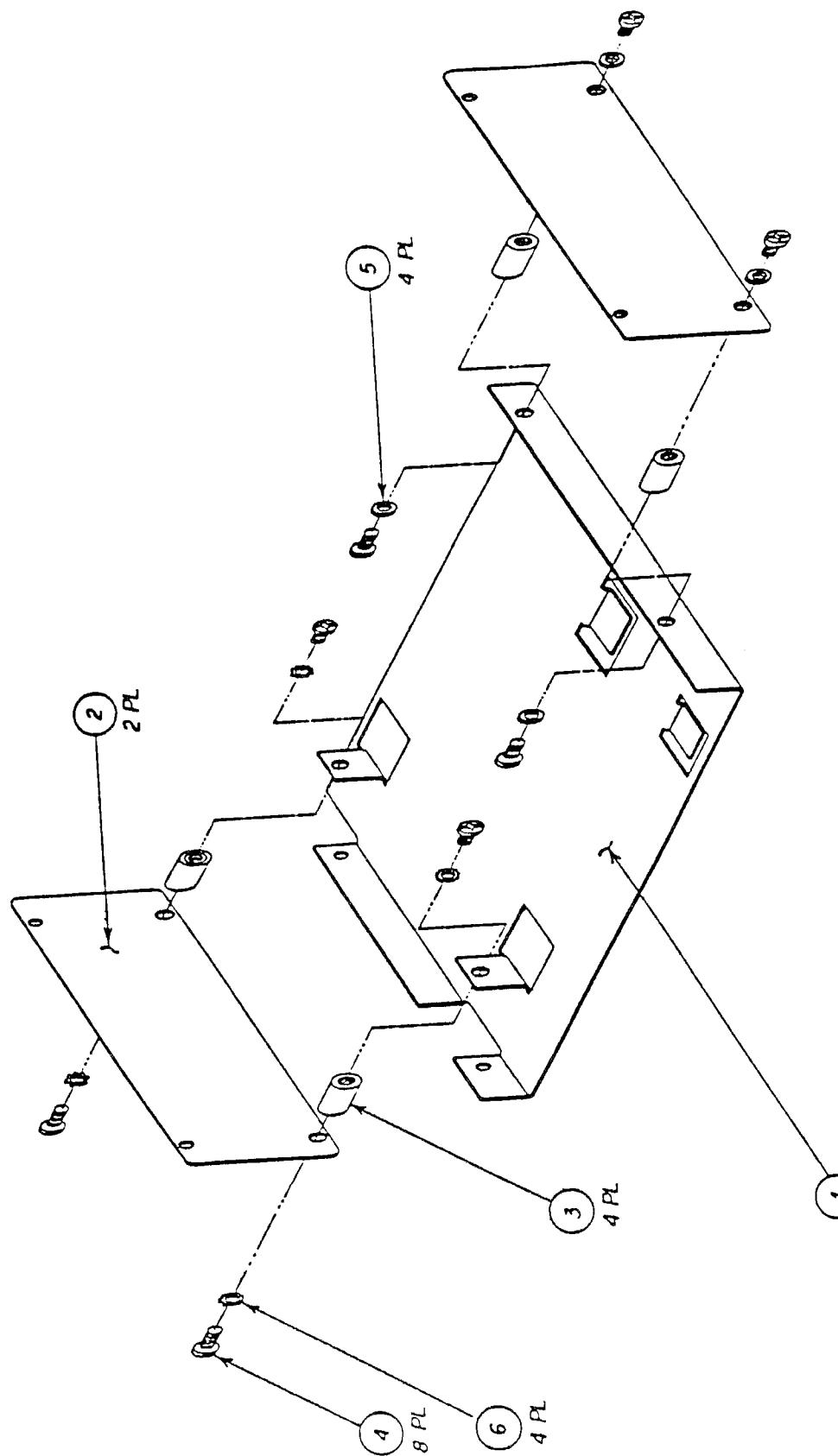
- J1 — 1 Terminator (Last device on cable)
- J1 — 2 Drive Select 0
- J1 — 3 Drive Select 1
- J1 — 4 Drive Select 2
- J1 — 5 Drive Select 3

## **PC10 TECHTOPICS**

### ***II — COMMODORE PC TECHTOPICS***

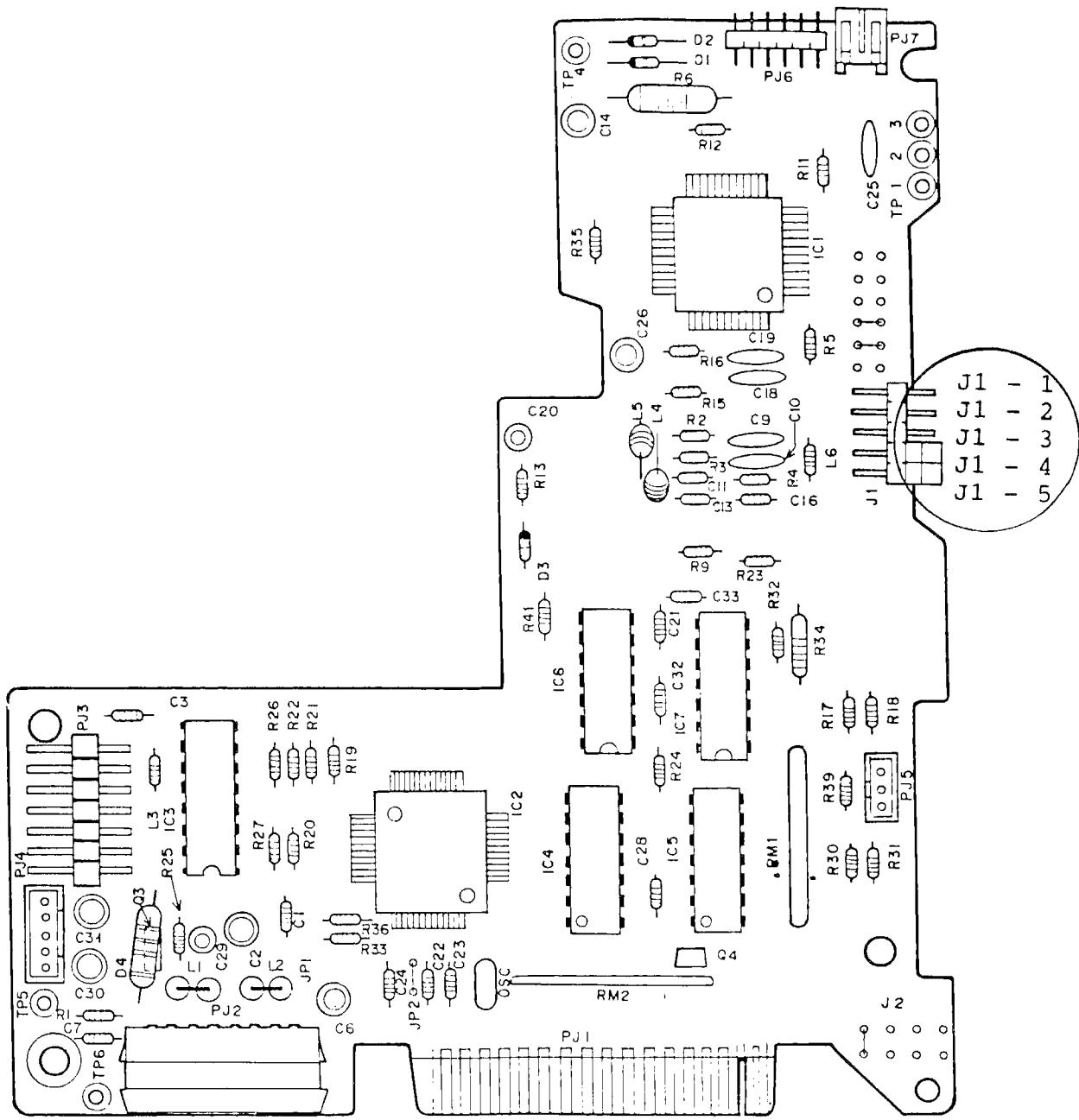
- 3) PC10 Hard Drive Mounting Instructions
  - A) Assemble hard disk bracket according to installation diagram enclosed with this section.
  - B) Remove top cover of PC10 (5 screws on rear and 2 screws on sides).
  - C) Remove Ram expansion card from main board.
  - D) Mount hard drive onto brackets with 4 screws.
  - E) Slide hard drive and bracket into housing space provided next to the floppy drive and fasten to the chassis with two screws.
  - F) Connect all necessary cables (These are supplied with third party hardware).
  - G) Reinstall Ram expansion card.
  - H) Test unit. Software installation and initialization procedures are included with third party hard disk units.
  - I) Reassemble top housing.

**PLEASE NOTE:** Commodore Service will not issue any credits for installation labor of third party hardware.



Mounting Assembly PC Hard Drive (Revision A)

ITEM	PART NUMBER	DESCRIPTION
1	380124-01	SUB CHASSIS HARD DISK
	380125-01	PLATE HOLDING HARD DISK
2	312219-01	SHOCK ABSORBER RUBBER
3	906800-03	SCREW PHL PAN HD M3
4	907272-06	WASHER FLAT M4.3
5	905635-04	WASHER LOCK EXT TOOTH M4
6		

***II — COMMODORE PC TECHTOPICS****PC Drive — Chinon F502 Type*

# **3**

# **AMIGA**

## **AMIGA SECTION**

---

- 3-1.1 A2000 SYSTEM SCHEMATICS**
- 3-1.2 ENCLOSURE: 18/3-1.2 PN 314135-01 A2000 SYSTEM SCHEMATICS**
- 3-2.1 A500/A2000 ALIGNMENT INSTRUCTIONS**
- 3-2.2 ENCLOSURE: 18/3-2.2 AMIGA ALIGNMENT INSTRUCTION SHEETS**
- 3-2.3 ENCLOSURE: 18/3-2.3 PN 314966-02 ALIGNMENT PROGRAM DISKETTE V1.1**
- 3-3.1 1902 TO 1080 CONVERSION ERRATUS**
- 3-4.1 FIX — A1000 KEYBOARD**
- 3-5.1 REPAIR TIP: IC/SOCKET CONTACT PROBLEMS**

---

**3-1.1 A2000 SYSTEM SCHEMATICS — PN# 314135-01**

THIS SERVICE MANUAL CONTAINS THE FOLLOWING SECTIONS WITH A COMPLETE COMPONENT PARTS LIST IN EACH SECTION.

- 1) A2000 MAIN PCB ASSY# 312720-03, SCHEMATIC# 312721
- 2) A2088 MAIN PCB ASSY# 380755-01, SCHEMATIC# 380756
- 3) A2090 MAIN PCB ASSY# 311979-01, SCHEMATIC# 311980
- 4) A2052 MAIN PCB ASSY# 312365-01, SCHEMATIC# 312366

CONSULT SECTION 2 — PARTS, OF THIS TECHTOPICS (NOV 87) FOR COMPONENT IC REPLACEMENT PARTS AVAILABILITY.

**3-1.2 ENCLOSURE: 18/3-1.2 A2000 SYSTEM SCHEMATICS**

ENCLOSED WITH TECHTOPICS FOR AMIGA SERVICE ONLY.

**3-2.1 A500/A2000 ALIGNMENT INSTRUCTIONS**

THE AMIGA ALIGNMENT KIT HAS BEEN UPDATED. A NEW INSTRUCTION MANUAL, PN 314967-02 AND PROGRAM DISKETTE PN 314966-02 ARE INCLUDED WITH THIS ISSUE.

**PLEASE NOTE:** THE NEW PART NUMBER FOR THIS KIT IS 314965-02 AMIGA ALIGNMENT KIT V 2.0, SEE 2-6.1 IN THIS TECHTOPICS.

INSTRUCTION MANUAL PN 314967-02 HAS BEEN UPDATED WITH INFORMATION ON THE CHINON F-354E 3.5 FLOPPY DISK DRIVE.

PROGRAM DISKETTE PN 314966-02 HAS BEEN MODIFIED TO OPERATE ON THE A500 and A2000 AMIGA SYSTEMS.

**3-2.2 ENCLOSURE: 18/3-2.2 PN 314967-02 AMIGA A1000/A500/A2000 INSTRUCTIONS.**  
ENCLOSED WITH TECHTOPICS FOR AMIGA SERVICE ONLY**3-2.3 ENCLOSURE: 18/3-2.3 PN 314966-02 A500/A2000 ALIGN PROGRAM DISK V1.1**  
ENCLOSED WITH TECHTOPICS FOR AMIGA SERVICE ONLY.**3-3.1 1902 TO 1080 CONVERSION ERRATUS**

ISSUE 17 — SEPTEMBER 87 TECHTOPICS DETAILED PROCEDURES TO CONVERT THE 1902 MONITOR TO A 1080 MONITOR BY INSTALLING JUMPERS.

**PLEASE NOTE:** THIS FIX IS VALID ONLY ON SOME 1902 MONITORS. OEM SUPPLIERS HAVE ELIMINATED CIRCUITRY ON LATER MODELS WHICH MAKE THE CONVERSION IMPOSSIBLE WITHOUT RECONSTRUCTING THE CIRCUIT.

**3-4.1 FIX — A1000 KEYBOARD**

IC 6570-36, PART NUMBER 328191-02 IS NOW IN STOCK. THE 6570 IS A SPECIALLY PROGRAMMED 6500 SERIES CHIP WHICH IS USED TO TRANSMIT A BYTE OF KEYBOARD DATA INTO THE SERIAL SHIFT REGISTER OF THE 8520, ONE BIT AT A TIME. THIS VERSION, -36 IS USED ON THE A500.

THIS IC, 328191-02 CAN BE USED TO REPLACE THE 6570-33 USED ON THE OLD STYLE A1000 KEYBOARD WITH THE FOLLOWING MODIFICATION.

DISASSEMBLE KEYBOARD, REMOVE DEFECTIVE IC

**NOTE:** IF YOU INSERT A 40 PIN SOCKET YOU WILL NOT BE ABLE TO REINSTALL SHIELD CORRECTLY.

REFER TO PAGE 1-19 AMIGA KEYBOARD SCHEMATIC, IN YOUR A1000 COMPONENT LEVEL SERVICE MANUAL, PN #314038-02.

REVERSE KCLK AND KDAT SIGNAL LINES. KCLK CONNECTS PIN 3 OF KEYBOARD CABLE (WHITE LEAD) TO PIN 38 OF IC. KDAT CONNECTS PIN 4 OF KEYBOARD CABLE (GREEN LEAD) TO PIN 37 OF IC.

**NOTE:** KEYBOARD IS AN OEM PRODUCT, PLEASE USE YOUR VOM TO CONFIRM SIGNAL PATH BEFORE REVERSING GREEN AND WHITE LEADS.

### **3-5.1 REPAIR TIP: IC/SOCKET CONTACT PROBLEMS**

IT IS POSSIBLE THAT POOR CONTACTS EXIST BETWEEN IC 8370 F. AGNUS, AND THE 84 PIN PLCC SOCKET ON A500 PCB ASSEMBLIES (PN 312510-03) WHICH HAVE "KEL" TYPE SOCKETS IN LOCATION U2.

**WARNING:** DO NOT ATTEMPT TO REMOVE IC 8370, F. AGNUS, UNLESS YOU ARE EQUIPPED WITH THE CORRECT EXTRACTION TOOL.

A BURNDY CHIP EXTRACTOR #QILEXT-1 SHOULD BE USED. THIS TOOL MAY BE PURCHASED THROUGH A BURNDY REP.

CBM SERVICE HAS OBTAINED THEM FROM:  
KIERULFF ELECTRONICS  
520 FELLOWSHIP RD. SUITE 106  
MT LAUREL., N.J. 08054  
(800) 367-7767  
(QILEXT-1) APPROXIMATELY \$10.00

TO CHECK FOR POOR CONTACTS OR INTERMITTENT PROBLEMS, ENABLE THE CLOCK ICON ON THE SCREEN AND OBSERVE THE DISPLAY WHILE TAPPING THE OUTSIDE OF THE SOCKET.

IT IS IMPORTANT TO TAKE PRECAUTIONS AND USE A TECHNIQUE WHICH WILL AVOID DAMAGE TO THE SYSTEM. YOUR REPAIR LAB SHOULD BE EQUIPPED WITH A CONDUCTIVE GROUNDING PAD. USE A NONCONDUCTIVE SURFACE TO TAP WITH.

IF AN IMPROPER CONTACT IS EXPOSED BY THE STRESS, THE CLOCK DISPLAY CAN BEHAVE ERRONEOUSLY. YOU MAY CORRECT THE PROBLEM BY REMOVING THE F. AGNUS CHIP, USING THE CORRECT TOOL, AND RE-ALIGNING THE PINS.

PLACE THE IC ON A FLAT SURFACE, FACE DOWN, AND WITH A STRAIGHT EDGE OBJECT PUSH THE PINS EVENLY TOWARDS THE OUTER FACE OF THE CHIP. DO THIS TO ALL FOUR SIDES.

IT IS NOT RECOMMENDED THAT THE SOCKET BE REPLACED. HOWEVER, YOU SHOULD EXAMINE THE SOCKET TO DETERMINE IF ALL THE CONTACTS APPEAR TO BE ORIENTED CORRECTLY. YOU CAN USE A SMALL "HOOK" TO PULL THE LEAD OUT A LITTLE. THIS CAN ALSO INSURE A FIRM CONTACT.

# **5**

# **PC**

## **PC SECTION**

---

- 5-1.1 INSTALLATION TIP: ATI VIDEO CARD**
- 5-1.2 REPRINT: PAGE 53 PC OPERATORS MANUAL**
- 5-1.3 REPRINT: PAGE 30 PC OPERATORS MANUAL**
- 5-2.1 REPAIR TIP: PARITY ERRORS**
- 5-3.1 COMPUTE EFFECTIVE ADDRESS**
- 5-4.1 PC10 (1-2-III) DISK DRIVE DIAGNOSTIC**
- 5-5.1 PC10-1, PC10-2 MEMORY MAP**

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### **5-1.1 INSTALLATION TIP: ATI VIDEO CARD**

TO CONFIGURE A PC10 COMPUTER FOR A RGB COLOR MONITOR YOU MUST SET THE DIP SWITCHES CORRECTLY ON BOTH THE ATI VIDEO CARD AND THE MOTHER BOARD.

SWITCH 5 ON THE MOTHER BOARD SHOULD BE ON. SEE REPRINT OF PAGE 53, ATTACHED.

SWITCHES 2, 5, 7, 8 ON ATI VIDEO CARD SHOULD ALL BE ON. SEE REPRINT OF PAGE 30.

### **5-1.2 REPRINT: 18/5-1.2 PC10 MAIN PCB SWITCH SETTINGS.**

ATTACHED TO PC SECTION OF THIS TECHTOPICS.

### **5-1.3 REPRINT: 18/5-1.3 ATI VIDEO CARD SWITCH SETTINGS.**

ATTACHED TO PC SECTION OF THIS TECHTOPICS.

**5-1.2 PC MAIN PCB SWITCH SETTINGS — REPRINT P. 53****System DIP Switches (Located on Main PCB)**

<b>Switch No.</b>	<b>Function</b>
1	OFF: Boot ON: System diagnostic
2	OFF: 8087 installed ON: 8087 not installed
3,4	System RAM configuration
5,6	Default video mode
7,8	Number of floppy drives installed

**System RAM Installed**

<b>Switch No.</b> 3,4	<b>Ram Size</b>
ON, ON	128 KB
OFF, ON	256 KB
ON, OFF	512 KB
OFF, OFF	640 KB

**Default Video Mode**

<b>Switch No.</b> 5,6	<b>Function</b>
ON, ON	Monochrome 40 x 25
OFF, ON	Color 40 x 25 (B&W mode)
ON, OFF	Color 80 x 25 (B&W mode)
OFF, OFF	Monochrome 80 x 25

**Number of Floppy Drives Installed**

<b>Switch No.</b> 7,8	<b>Number of installed drives</b>
ON, ON	1
OFF, ON	2
ON, OFF	3
OFF, OFF	4

### 5-1.3 ATI VIDEO CARD SWITCH SETTINGS — REPRINT P. 30

Note: Numerals on figure indicate switch numbers.

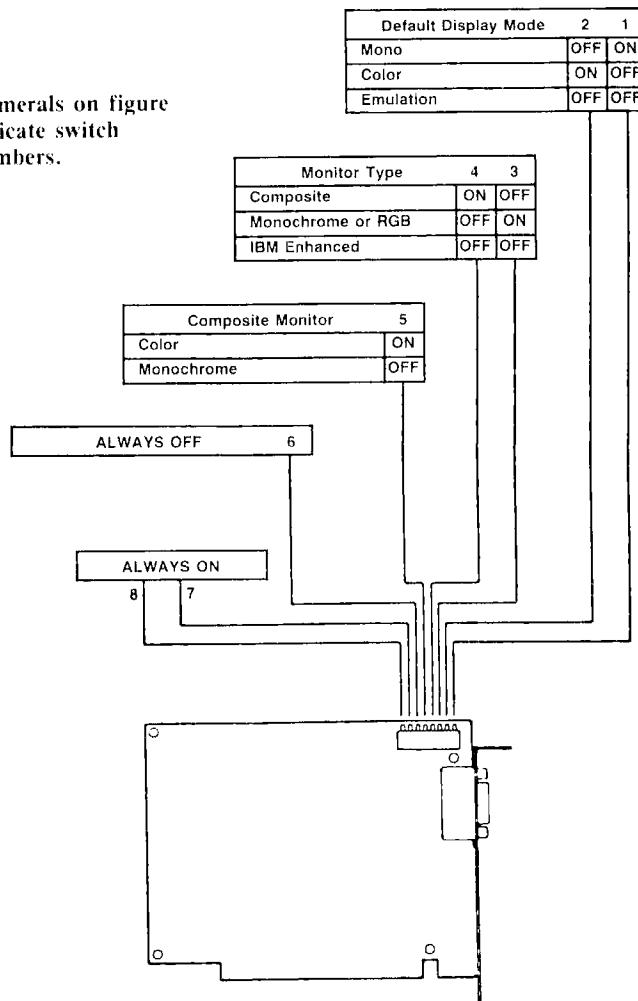


Figure D-2. ATI Graphics Solution Switch Settings

	DIP — Switch	
	SW5	SW6
Default Video Mode		
Emulation Mode	ON	OFF
Color/Graphics	ON	OFF
Monochrome	OFF	OFF

Table D-1. Commodore PC Switch Settings on Motherboard.  
(See Appendix F for more details.)

**5-2.1 REPAIR TIP: PC PARITY ERRORS**

THE PC USES A NINTH BIT TO DETERMINE PARITY. IF A BYTE CONTAINS AN EVEN NUMBER OF "1" BITS, THEN A "1" WILL BE GENERATED IN THE PARITY BIT. IF THE BYTE CONTAINS AN ODD NUMBER OF "1" BITS, THEN A "0" WILL BE GENERATED IN THE PARITY BIT. THE SYSTEM MAINTAINS THIS "ODD PARITY" TO INSURE THAT DATA HAS NOT BEEN CORRUPTED DURING DATA TRANSFERS.

REFER TO YOUR PC SERVICE MANUAL PN #319914. PAGES 10 AND 11 TO LOCATE THE IC'S LISTED.

- A) CHECK U30 — THIS IS WHERE THE PARITY OR NINTH BIT IS STORED
- B) CHECK U9 — RAM EXPANSION BOARD, UP TO 512K. CHECK U10 & U11 FOR 512 TO 640K.
- C) CHECK U1 — PINS 5 & 6 FOR PCK AND  $\overline{PCK}$  ALSO CHECK PIN 1, CLR.
- D) CHECK SIGNAL FROM U8 PIN 12 TO U2 PIN 11, OUT PIN 10, ENRAMPCK
- E) CHECK U9 — PINS 5 AND 15 (BUFFER) MAY GIVE FALSE VALUE BACK ON DB3. IF THIS CHIP IS BAD A MESSAGE OF "UNEXPECTED SWITCH INTERRUPT" WILL OCCUR AND MAY ALTER SIGNALS SENT FROM U20 (SWITCH SETTINGS).

**5-3.1 COMPUTE EFFECTIVE ADDRESS**

UNDER CERTAIN ERROR CONDITIONS AN ADDRESS WILL BE DISPLAYED ON THE SCREEN INDICATING WHERE IN MEMORY A PROBLEM HAS OCCURRED. THE ADDRESS IS EXPRESSED IN THE FORM OF REGISTER CONTENTS.

EXAMPLE: CS:IP = 83AB:1010

CS, THE SEGMENT REGISTER CONTAINS HEX 83AB  
IP, THE INSTRUCTION POINTER CONTAINS HEX 1010

TO COMPUTE THE EFFECTIVE ADDRESS, SHIFT THE CONTENTS OF THE SEGMENT REGISTER 4 BITS LEFT. THEN ADD.

EXAMPLE: SHIFT LEFT 4 BITS CS = 83AB0  
ADD IP = 1010

RESULT EFFECTIVE 20 BIT ADDRESS 84AC0

NOTE: BYTE HOLDS TWO HEX DIGITS.

**5-4.1 PC10 (1-2-III) DISK DRIVE DIAGNOSTIC**

DRIVE ALIGNMENT DIAGNOSTICS FOR THE PC10 (1-2-III) HAVE BEEN RECEIVED. SERVICE CENTERS WHO HAVE PURCHASED THE PC STARTUP KIT WILL BE SHIPPED THIS SECTION OF THE KIT SHORTLY.

## 5-5.1 PC10-1, PC10-2 MEMORY MAP

Usage	Address	Size
00000-003FF	1K	Interrupt vectors
00400-004FF	256	BIOS/DOS data area
00500-3FFFF	255K	DOS/User RAM
40000-7FFFF	256K	User RAM
80000-9FFFF	128K	User RAM
A0000-A1FFF	64K	Reserved
B0000-B0FFF	4K	Monochrome video RAM
B1000-B3FFF	12K	Additional monochrome video RAM
B4000-B7FFF	16K	Reserved
B8000-BFFFF	32K	Color video RAM
C0000-C7FFF	32K	Reserved (diagnostics or video ROM)
C8000-C9FFF	8K	Hard disk BIOS (on controller card)
CA000-FBFFF	200K	Reserved
FC000-FFFFF	16K	BIOS ROM (version 1D is only 8K)

00000	256 K standard memory
3FFFF	
40000	Memory expansion
9FFFF	
A0000	Reserved
AFFFF	
B0000	Monochrome video
B3FFF	
B4000	Reserved
B7FFF	
B8000	Color video
BFFFF	
C0000	Diagnostics or Video
C7FFF	
C8000	Hard disk BIOS
C9FFF	
CA000	Reserved
FBFFF	
FC000	BIOS
FFFFF	

COMMODORE  
**AMIGA**  
QUICK REFERENCE SHEET

19/1-3.1

**INVOICE PAYMENTS TO:**

Commodore Business Machines  
P.O. Box 7780-1646  
Philadelphia, PA 19182-0322

**PARTS RETURN AND  
LABOR CLAIMS TO:  
(Same Box)**

Commodore Business Machines  
Parts Depot  
1200 Wilson Drive  
West Chester, PA 19380

**DEFECTIVE PARTS:  
(D.O.A.)**

Same as Above (Parts Depot Address)  
Part must be clearly identified as D.O.A.  
on NARDA form

**BUSINESS EQUIPMENT  
REPAIR:**

Call (215) 431-9235 for instructions  
and repair prices

**TRAINING REQUESTS:**

Bruce Mortenson  
Commodore Business Machines  
1200 Wilson Drive  
West Chester, PA 19380

**MISSHIPMENTS AND  
ORDER INQUIRIES:**

Call Parts Hotline for instructions  
1-800-874-4799

**NOTE**

**HOTLINES ARE FOR SERVICE CENTERS ONLY NOT CONSUMERS**

COMMODORE  
**AMIGA**  
 TELEPHONE DIRECTORY<sup>TM</sup>

19/1-2.1

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# 3

# AMIGA

## AMIGA SECTION

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### **3-1.1 REPAIR POLICY: A1060 SIDECAR.**

A1060 SIDECAR UNITS ARE BEING REPAIRED BY COMMODORE SERVICE DEPARTMENT IN-HOUSE. A FIXED RATE OF \$75.00 PER UNIT WILL BE CHARGED TO THE SERVICE CENTER. UNITS MUST BE SUBMITTED FOR REPAIR BY A SERVICE CENTER AND WILL BE RETURNED FROM COMMODORE BACK TO THE SERVICE CENTER, NOT TO THE END USER. PLEASE ALLOW FOUR TO SIX WEEKS TURN-AROUND.

### **3-2.1 AMIGA STARTUP SEQUENCE — KICKSTART V1.2.**

THE FOLLOWING STARTUP SEQUENCE IS VALID FOR ALL AMIGA SYSTEMS USING KICKSTART VERSION 1.2.

- 1) 1/3 SECOND DELAY (OPERATING SYSTEM ENTERS COUNT).
- 2) JUMP TO ROM CODE IN DIAGN CARTRIDGE IF PRESENT.
- 3) DISABLE/CLEAR ALL INTERRUPTS AND DMA'S.
- 4) TURN ON SCREEN.
- 5) DARK GREY SCREEN DISPLAYED — HARDWARE OK.
- 6) RED SCREEN DISPLAYED — ROM CHECKSUM FAILURE.
- 7) YELLOW SCREEN DISPLAYED — SPURIOUS EXCEPTIONS HAVE OCCURRED.
- 8) GREEN SCREEN DISPLAYED — PROBLEM HAS OCCURRED WHILE LOCAL MEMORY IS BEING CONFIGURED.

NOTE: THIS SYMPTOM IS PRESENT ON UNITS WITH SOCKET/F. AGNUS CONTACT PROBLEMS. SEE TECHTOPICS ISSUE 18 - 3-5.1. F. AGNUS PROVIDES ADDRESSING TO RAM MULTIPLEXING (SEE PAGE 8 OF SERVICE MANUAL).

- 9) BLUE SCREEN DISPLAYED — PROBLEM HAS OCCURRED DURING CUSTOM IC REGISTER CHECK.
- 10) LIGHT GREY SCREEN DISPLAYED — SOFTWARE OK.

### 3-3.1 A2000 KEYBOARD FIX — HITEK TYPE.

HITEK TYPE KEYBOARD USED WITH A2000 PCB REV. 4.0 OR 4.1 CAN EXHIBIT A LOSS OF THE FIRST CHARACTER TYPED AFTER POWER-UP OR RESET. THERE ARE TWO TYPES OF KEYBOARDS FOR THE A2000, THE HITEK WHICH CAN BE DISTINGUISHED BY THE BLACK SHIELD VISIBLE BETWEEN THE KEY SPACES AND THE CHERRY WHICH IS A LIGHTER WEIGHT AND HAS A TAN COLOR VISIBLE BETWEEN THE KEY SPACES.

REFER TO PAGE 14 OF A2000 SYSTEM SCHEMATICS (MAILED WITH TECHTOPICS 19, TO AMIGA AUTHORIZED SERVICE ONLY). LOCATE KEYBOARD CONNECTOR CN300. FOLLOW \*KBCLK SIGNAL TO C910 1000pF CAP, REMOVE C910. FOLLOW \*KBDATA SIGNAL TO C911 1000pF CAP, REMOVE C911.

BOTH CAPACITORS C910, C911 ARE LOCATED ON THE PCB DIRECTLY OFF THE KEYBOARD CONNECTOR CN300. IT WILL BE NECESSARY TO REMOVE THE DRIVE CHASSIS IN ORDER TO ACCESS THESE LOCATIONS.

A SPECIAL REPAIR RATE OF \$20.00 WILL BE CREDITED TO AUTHORIZED SERVICE CENTERS FOR THIS FIX.

### 3-4.1 MODIFICATION: A2088 XT EMUL — USE EXT 1020 AS DRIVE A:.

A2088 XT EMULATOR BOARD IS CONFIGURED TO SEE THE INTERNAL 5 1/4 DRIVE AS DRIVE A:. SOME CUSTOMERS ARE REQUESTING THAT AN EXTERNAL 5 1/4 BE CONFIGURED AS DRIVE A:. TO MODIFY THE A2088 YOU MUST REVERSE THE DRIVE SELECT SIGNAL LINES.

REMOVE THE A2088 BRIDGE CARD FROM UNIT. LOCATE IC U49 (74LS175), SEE PAGE 26 IN A2000 SYSTEM SCHEMATICS.

NOTE: PIN 10 (\*DRVSEL1) IS TIED TO PIN 1 OF U44 (7406) AND PIN 15 (\*DRVSEL2) IS TIED TO PIN 3 OF U44.

ON BOTTOM SIDE (TRACE SIDE) OF PCB CUT TRACES ON PINS 10 AND 15 OF U49. SOLDER A JUMPER WIRE FROM PIN 10 OF U49 TO PIN 3 OF U44. SOLDER SECOND JUMPER FROM PIN 15 OF U49 TO PIN 1 OF U44. EXTERNAL 1020 WILL NOW BE CONFIGURED AS DRIVE A: AND INTERNAL 5 1/4 WILL BE CONFIGURED AS DRIVE B:.

NOTE: THIS MODIFICATION IS DONE AT THE CUSTOMERS' REQUEST, AND WILL VOID THE WARRANTY ON THE A2088.

COMMODORE WILL NOT ASSUME ANY LIABILITY FOR THIS MODIFICATION AND NO CREDIT WILL BE GIVEN FOR PCB'S RETURNED WHICH HAVE THIS MODIFICATION.

**5****PC****PC SECTION****5-0.0 PC SECTION INDEX — TECHTOPICS ISSUE 19, DECEMBER 1987.****5-1.1 BIOS SELF TEST DIAGNOSTICS.****5-1.1 BIOS SELF TEST DIAGNOSTICS.**

The Commodore PC carries out a number of self checks when it is switched on. When all the tests are completed satisfactorily the PC will boot the MS-DOS operating system. Failure of a test that is essential to the operation of the PC results in the output of an error code and a system halt. Failure of non essential functions result in the output of an error code but the system continues with the test.

All errors below 62 (hex) are fatal system errors and cause a system halt. Errors above 61 (hex) are treated as warnings so power up continues. DIP switch 1 on the system board is used to loop the diagnostic tests (see error code FF).

The various diagnostic tests are as follows:

<b>ERROR CODE</b>	<b>TEST</b>	<b>CAUSE OF ERROR</b>
00	CPU/SYSTEM BUS	This error occurs if the CPU is faulty, or the system bus is bad (data, addr. etc.), or the ROM is faulty. Action: system HALT.
10	TIMER 0,1	Occurs if Timer outputs 0 or 1 are too slow or too fast. Action: system HALT.
20	SYSTEM PORT, TIMER 2	System port (61H) does not store control bits or timer 2 cannot be controlled (GATE 2, OUTPUT 2). Action: system HALT.
30	ROM CHECKSUM BAD	The BIOS ROM does not checksum to 00. The ROM itself is faulty, or the address logic, or the data bus is bad. Action: system HALT.
40	DMA CONTROLLER R/W ERROR	Registers of the DMA controller do not store parameters. Action: system HALT.
50	PROGRAMMABLE INTERRUPT CONTROLLER	Interrupt controller does not respond to timer interrupt. Action: system HALT.

**5-1.1 BIOS SELF TEST DIAGNOSTICS (continued)**

<b>ERROR CODE</b>	<b>TEST</b>	<b>CAUSE OF ERROR</b>
60	ADDRESS FAILURE	All locations up to 640 K (if present) are filled with address dependent contents and then afterwards read back and checked. Faults in address decoding will cause a write to one location to destroy other locations. Action: system HALT.
61	BASE RAM	A R/W storage failure in the lower 16 K RAM. Action: system HALT.
62	MAIN RAM	R/W storage failure in the RAM size specified by DIP switches 3 and 4. Either the RAM is bad or the DIP switches reflect the wrong RAM size. Action: Print RAM segment in error followed by the bit pattern (e.g. AA or 55) or 00 (for parity error) followed by the words RAM. Memory size is adjusted downwards.
80	VIDEO RAM	R/W storage failure in the video RAM section. As set by DIP switches. Action: Issue one long and two short beeps.
81	VIDEO RETRACE	No video signal found or retrace pulses missing. Action: Issue one long and two short beeps.
A0	KEYBOARD	No keyboard present, or key struck, or bad keyboard. Action: Print scan code of stuck key (if any) followed by the word KEY.
C1	ROM SEARCH 1	An extension ROM at C0000 to C7FFF (hex) is found with a bad checksum. Action: Issue two short and one long beep. Print segment of ROM on screen followed by the word ROM.
C2	ROM SEARCH 2 - HD BIOS	An extension ROM at C8000 to EFFFF (hex) is found with a bad checksum. Indicates ROM on HD controller failure. Action: Issue two short and one long beep. Print segment of ROM on screen followed by the word ROM.

**5-1.1 BIOS SELF TEST DIAGNOSTICS (continued)**

<b>ERROR CODE</b>	<b>TEST</b>	<b>CAUSE OF ERROR</b>
1701	HARD DISK CONTROLLER	The hard disk controller contains BIOS code for operating the hard disk. If the ROM checksum is OK it is called at powerup for checking the hard disk and controller. An error is indicated by printing 1701 on the screen.
D0	FLOPPY DISK CONTROLLER	Bad status response after controller initialization. Action: Print the word FDC on the screen.
E1	PRINTER	Printer port data lines do not read back same contents. Action: Print the word PRN on screen.
E2	SERIAL INTERFACE - ACIA	Fault with serial interface. Action: Print the word ACIA on screen.
FF	SYSTEM OK, END OF DIAGNOSTICS.	Actions: Attempts to bootstrap if DIP switch 1 is OFF. If this switch is ON the system performs a cold start and loops the diagnostics until an error is found. Even if an error is above 61 (hex) the system halts.  Note: This message will not be printed on the screen.